NAVIPAC

12. USER'S GUIDE TO HELMSMAN'S DISPLAY

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1 READING GUIDE

This user's guide describes the user interface to the NaviPac Helmsman's Display program. It provides you with an overview of how to get around in the program as well as a description of the many dialogues. The NaviPac Online and Set-up program are **not** described in this document - please refer to [2] and [3].

The NaviPac Helmsman's Display is a Microsoft 32 bit program running on a NT workstation. You are supposed to be familiar with the Windows NT environment to be able to operate the NaviPac software correctly.

The User's Guide to NaviPac Helmsman's Display begins with a quick tour that should enable the operator to begin using the Helmsman's display in a simple form, and is thereafter structured according to the main functions of the Helmsman's Display program:

Chapter 2: A Quick tour – how to set-up and use the Helmsman's Display in a simple way.

Chapter 3: Introduction to the NaviPac Helmsman's Display.

Chapter 4: Program overview and menu functions briefly described.

Chapter 5: Detailed functions description.

Chapter 6: Description of the various objects the Helmsman's Display can handle.

Chapter 7: Plotting facilities in the Helmsman's Display.

Chapter 8: Known problems in the Helmsman's Display.

2 A QUICK TOUR

After reading the following chapter, you should be able to use the Helmsman's Display to insert Runlines, display steering/guidance information, and to start/stop Runlines & recording. For a detailed description of the various menu items, you must read chapter 3 and forward.

2.1 Connecting to NaviPac

Before starting the Helmsman's Display, the NaviPac program should be running, and the Red/Yellow/Green signal bar should be green.

From the On-line program select **<View>** and **<Helmsman's Display>,** and the helmsman's program will start with the following default screen:

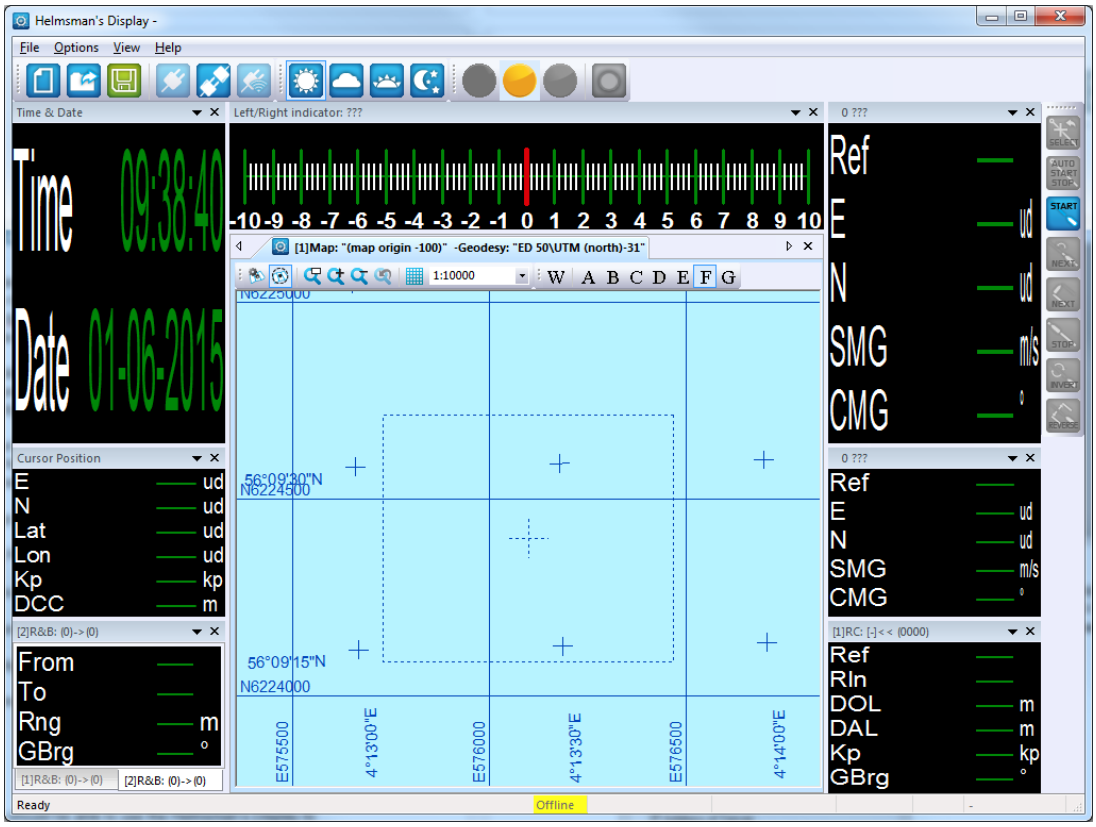


Figure 1 - Helmsman's Display window

. You may wish to save and name your job file at this point. To have the Helmsman's Display receive information from the NaviPac program, you must select: **<File>** and **<Manual Connection**> or press the enabled icon on the main taskbar.

The following menu will appear:

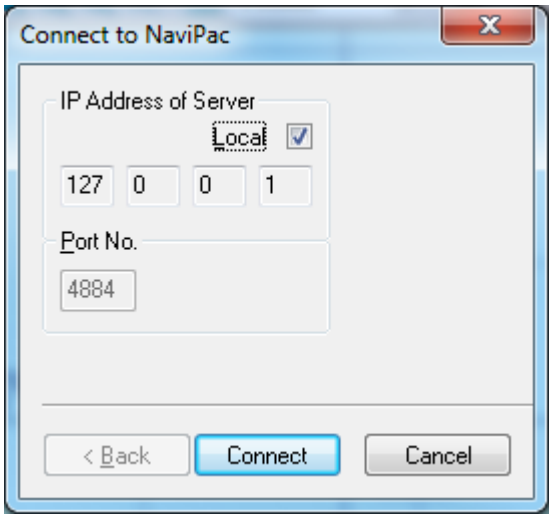


Figure 2 - Connect window. Click "Local" to set to 127.0.0.1

Enter the IP address of the PC running NaviPac Online if it is not your local machine. If NaviPac Online is running on the same machine as Helmsman's Display, you must enable the <**Local**> check box, and the IP address will automatically change to 127.0.0.1, which is the IP address of the local computer. Finish this dialog by pressing <**Connect**>. The helmsman's program will start to update. If it is the first time you start the program, it will look similar to this:

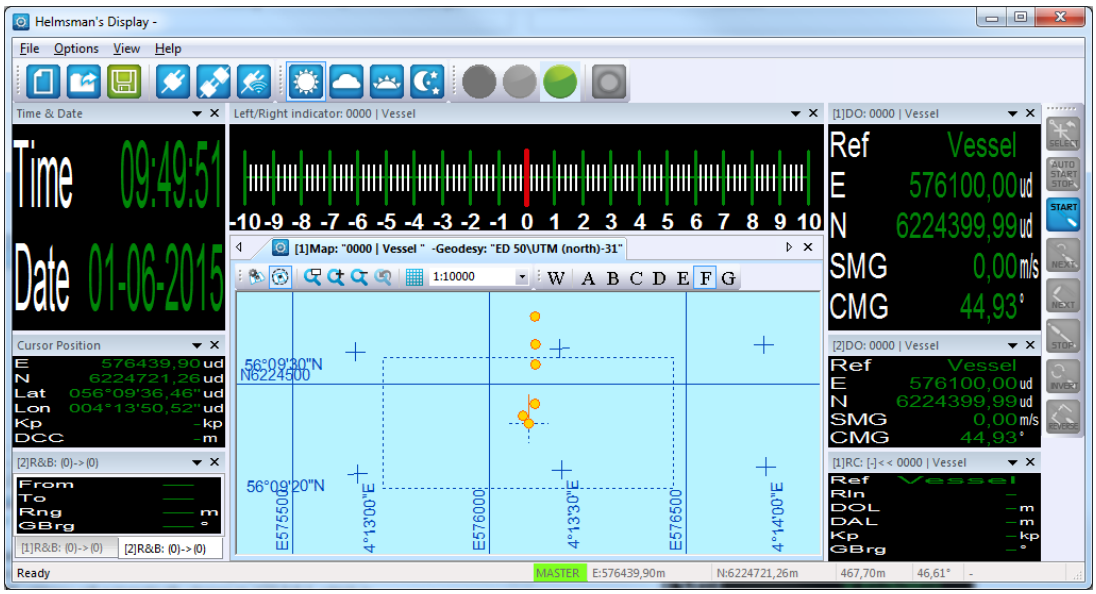


Figure 3 - Connected Helmsman's Display window

2.2 Arranging windows

The next step is to arrange the various views within the helmsman's window. By default the following views are open the first time you start the Helmsman's Display:

Offline indicator view:

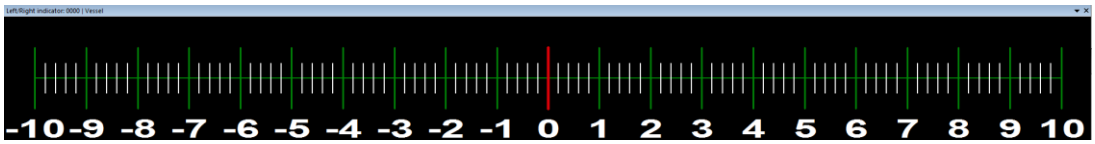


Figure 4 - Offline indicator view

Cursor position:

Figure 5 - Cursor view

Dynamic Object view:

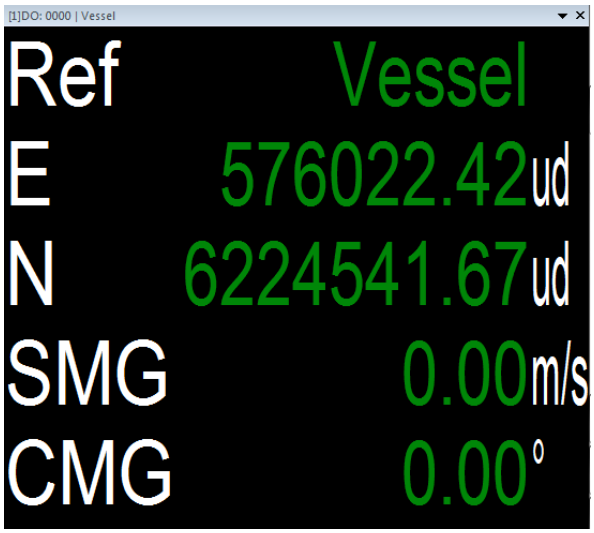


Figure 6 - Dynamic object view

Single Range and Bearing view:

Figure 7 - Single range and bearing view

Map View:

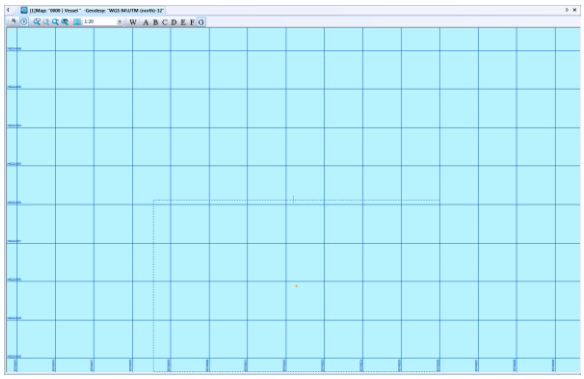


Figure 8 - Map View

Three bars are attached to the Map View:

The zoom bar:

- Settings: Open the Map View settings window.
- Auto-centre: Keeps the Map View around the selected object at all times when selected. Click to toggle on/off.
- Zoom Mode: Creates a zoom around a selected region, click icon and define box with mouse.
- Zoom In/Zoom Out: Single click to zoom in or out one level.
- Scale Back: Returns the scale to the previous zoom. Can be used more than once to back up to previous scales.

The scale bar:

- Toggle Scales/Ticks: Toggle scale units between a scale ratio and scale distance.
- Predefined scales can be selected from the drop down menu bar.

The (CM93v2) level bar:
(mainly used in relation to using the older CM93v2 format)

- World Level (W) – 1:40000000
- Level A – 1: 3000000
- Level B – 1:1000000
- Level C – 1:200000
- Level D – 1:100000
- Level E – 1:25000
- Level F – 1:10000
- Level G – 1:1000

You can detach the bars by left-clicking the background of the bar, and dragging the bar to a new position:

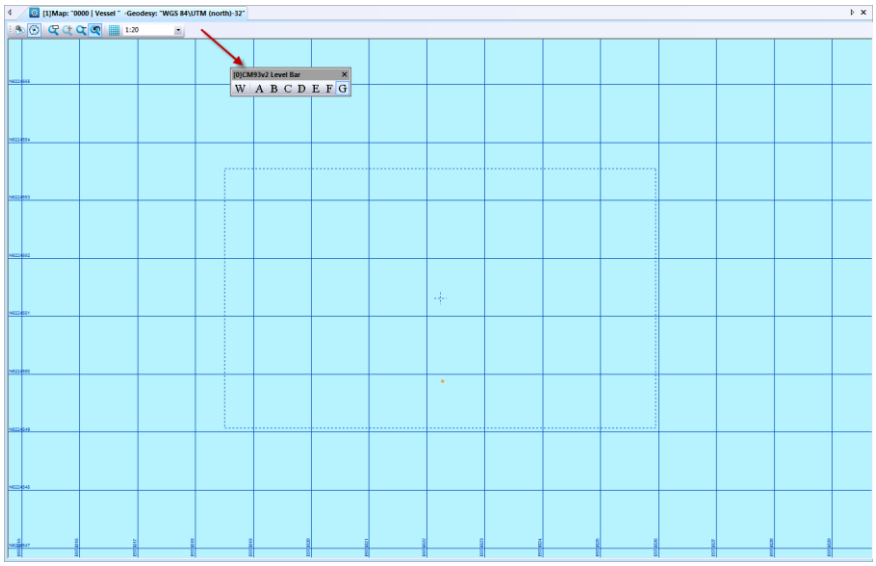


Figure 9 - Unlock and move taskbars from Map View window

Two map windows can be placed side by side (both horizontally and vertically) or stacked on top of each other. If stacked, the maps can be selected with the tabs along the top.

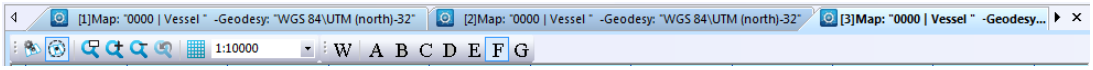

[1]Map: "0000 | Vessel " -Geodesy: "WGS 84\UTM (north)-32"
[2]Map: "0000 | Vessel " -Geodesy: "WGS 84\UTM (north)-32"
[3]Map: "0000 | Vessel " -Geodesy...
1:10000
W A B C D E F G

Figure 10 - Map View top bar

By left-clicking the Caption/Title bar of any window, you can move the views so they do not overlap. All windows with the exception of the Map View can be moved outside of the Helmsman's Display window so the Map View can be up to full screen in size. Each of the data windows can be resized so the text is readable. Dragging two windows over each other will bring up the split menu options as shown below. The window will preview placement in blue by hovering over the tab.

Figure 11 - Placing two view windows together

There are endless possibilities to arrange the views, and these are only examples of how the views can be arranged:

Before you are ready to use the Helmsman's Display for surveying, you need to select one more view. From the **<View>** menu select: **<Runline Control>** and **<New Runline Control view>.**

Figure 12 - Runline Control view

Move the Runline Control view to the right side. Detach the Survey Bar and move it to the top menu bar or outside of the Helmsman's window. Runline Control keeps track of which lines have been fully surveyed and which have been partially surveyed. It can also control your NaviPac Logging and Custom Logging windows. If any logging window is open when you click **<Start>** on Runline Control, that window will begin logging.

To save the setting, so the Helmsman's Display will appear the same way next time you start, you must select **<Window>** and **<Save Window Setting>** or press the floppy disk icon on the tool bar. Also, check to make sure there is a check mark next to **<Autoload JobFile>** and click to toggle on/off.

2.3 Displaying the vessel outline

To display the vessel outline, you must right click the Map View and select **<Dynamic Object>** and **<List Dynamic Objects>.**

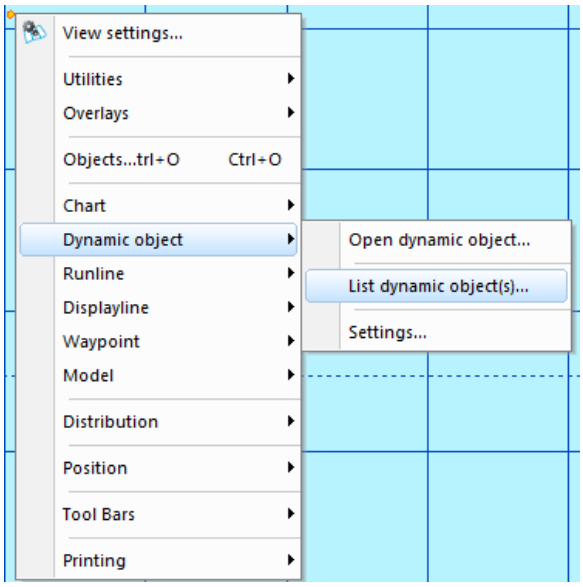


Figure 13 - List dynamic objects

The following menu will appear:

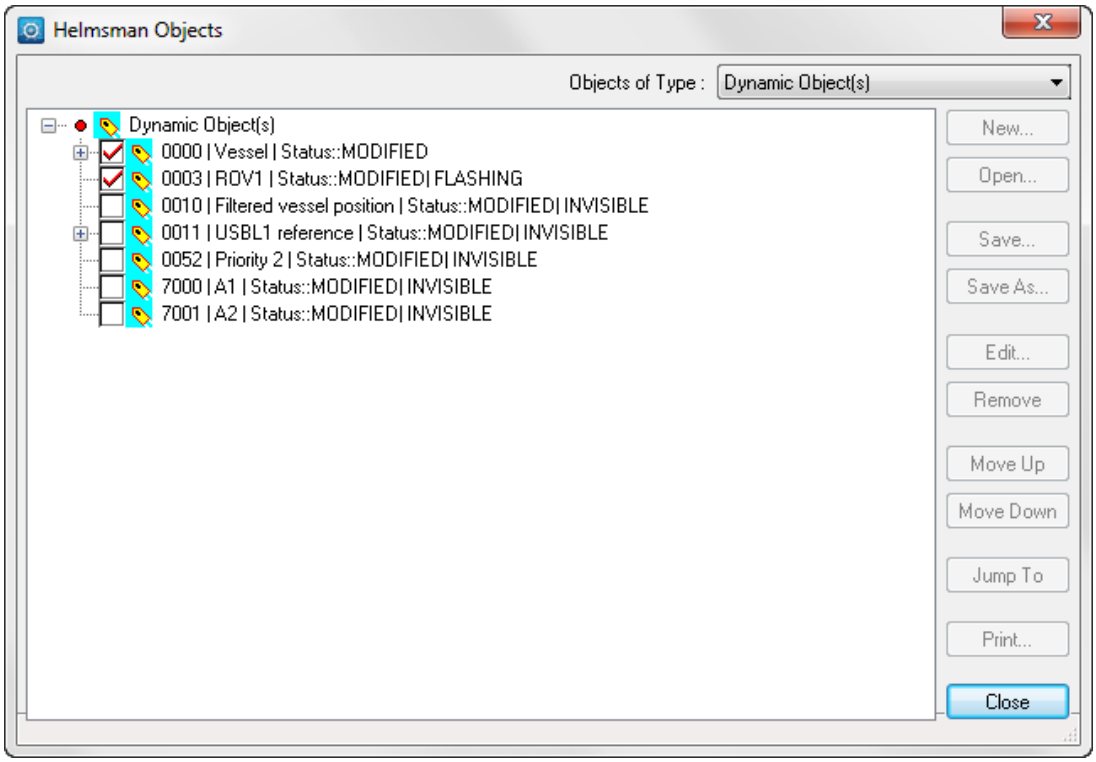


Figure 14 - Dynamic objects window

Select the **<Vessel Object>** and press **<Open>.** You will now be in the C:\EIVA\NaviPac\Setup directory, where amongst other files, the vessel outline files (*.shp files) are located. Select the **<default.shp>** and press **<Open>.**

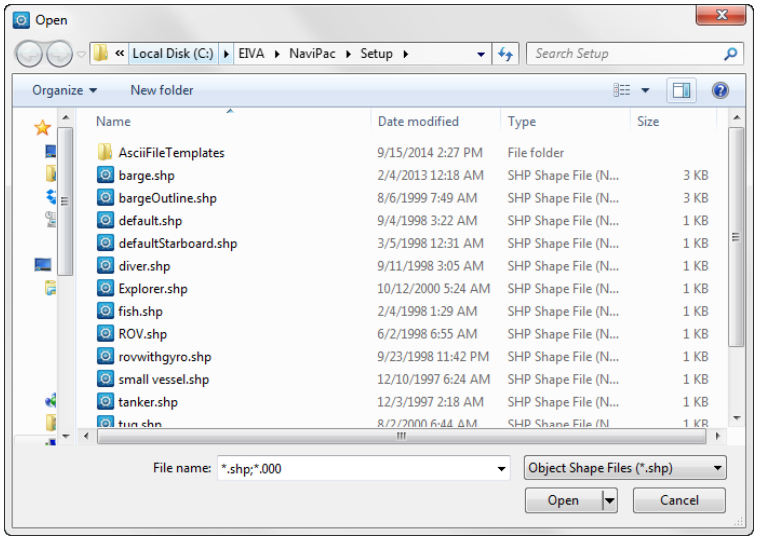

Open
Local Disk (C:) ▸ EIVA ▸ NaviPac ▸ Setup ▸
Search Setup
Organize
New folder
Name
Date modified
Type
Size
AsciiFileTemplates 9/15/2014 2:27 PM File folder
barge.shp 2/4/2013 12:18 AM SHP Shape File (N... 3 KB
bargeOutline.shp 8/6/1999 7:49 AM SHP Shape File (N... 3 KB
default.shp 9/4/1998 3:22 AM SHP Shape File (N... 1 KB
defaultStarboard.shp 3/5/1998 12:31 AM SHP Shape File (N... 1 KB
diver.shp 9/11/1998 3:05 AM SHP Shape File (N... 1 KB
Explorer.shp 10/12/2000 5:24 AM SHP Shape File (N... 1 KB
fish.shp 2/4/1998 1:29 AM SHP Shape File (N... 1 KB
ROV.shp 6/2/1998 6:55 AM SHP Shape File (N... 1 KB
rovwithgyro.shp 9/23/1998 11:42 PM SHP Shape File (N... 1 KB
small vessel.shp 12/10/1997 6:24 AM SHP Shape File (N... 1 KB
tanker.shp 12/3/1997 2:18 AM SHP Shape File (N... 1 KB
File name: *.shp;*.000
Object Shape Files (*.shp)
Open
Cancel

Figure 15 - Open object window

From the Helmsman's Objects menu press **<Close>.**

To see the vessel outline you must select a scale of approximately 1000 on the scale bar (50m scale distance). This can be done by pressing **<+>** or **<->** or by typing the number **<1000>** in the scale and left-click the map view, selecting "1:1000" from the scale menu or selecting letter "G" from the pre-set scale letters.

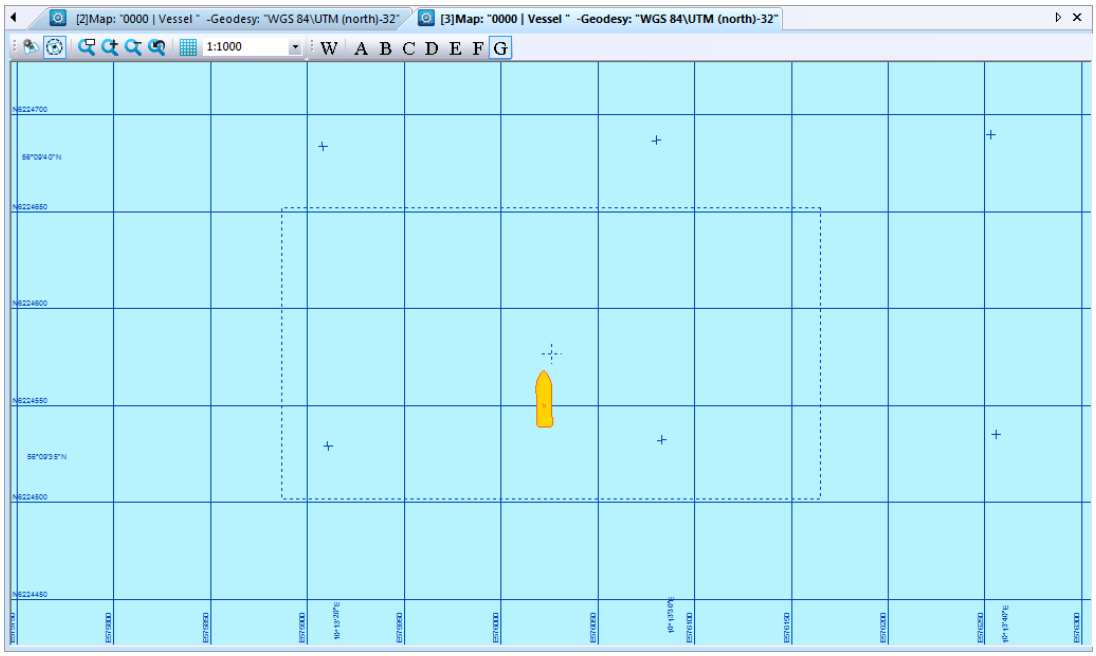


Figure 16 - Map View window

2.4 Managing Runlines

Before we can start the survey and have steering information on the Helmsman's Display, we need to create a Runline that the vessel should follow. In NaviPac we have two types of Runlines: single segment Runlines and continuous Runlines:

Single segment:

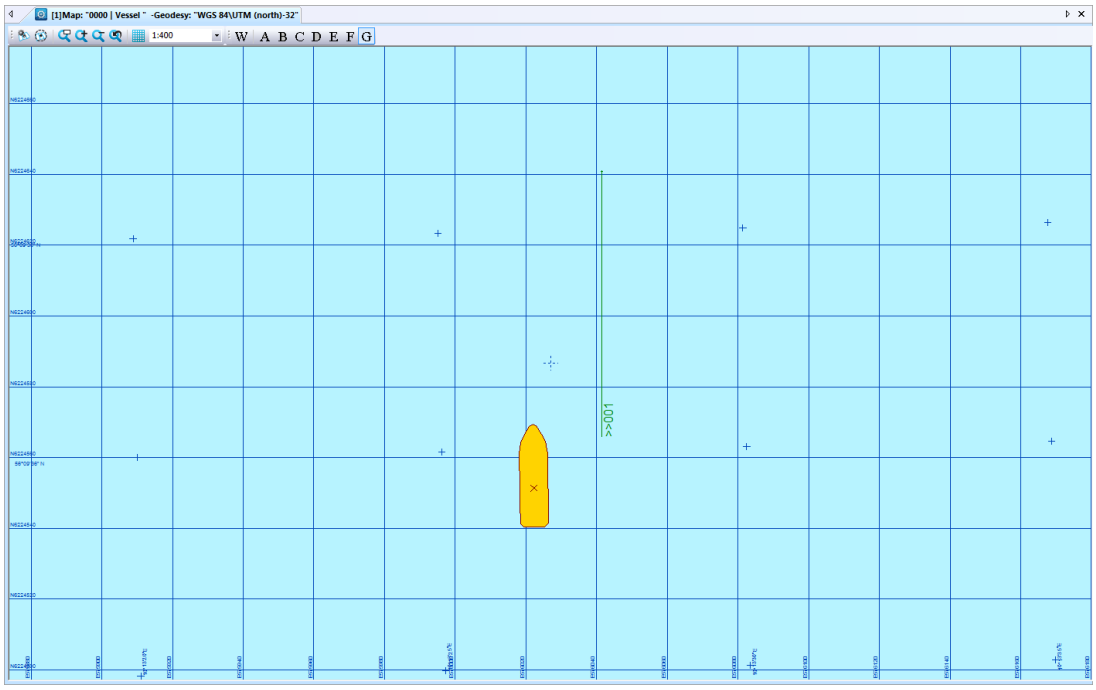


Figure 17 - Single segment Runline

Continuous Runlines

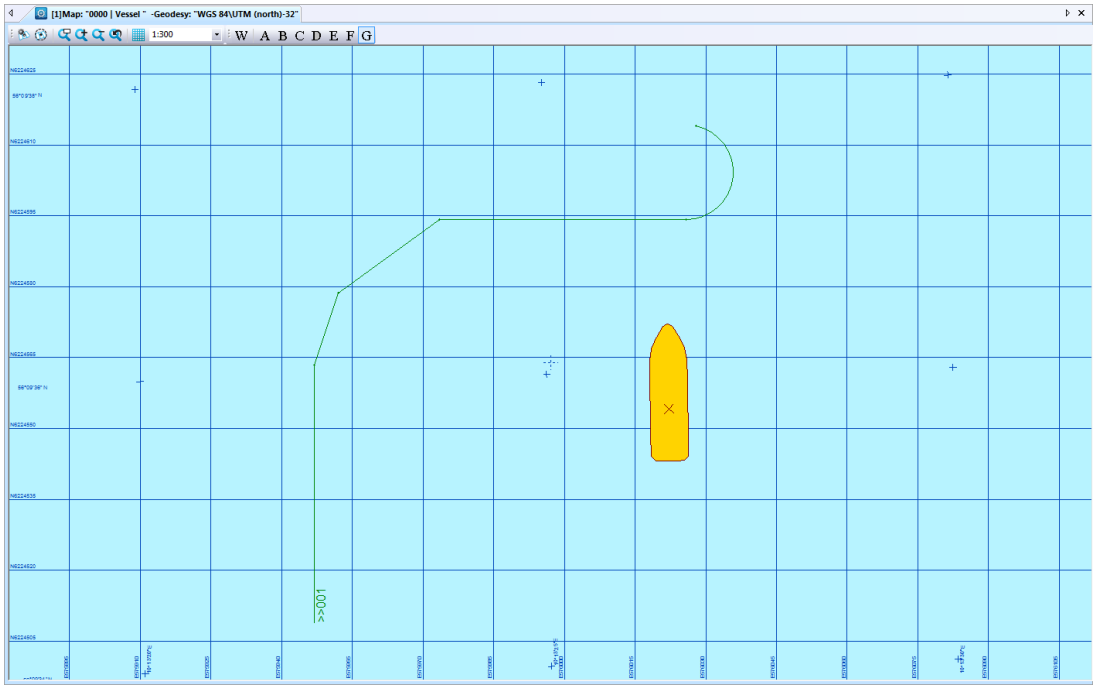


Figure 18 - Multi-segment Runline

The Runlines can be created by manual entry of coordinates or by using the cursor.

2.4.1 Manual created Runline (single segment)

To create a Runline by manual coordinate entry you can either:

Right click the map-view and select **<Runline>** and **<New Runline>,**

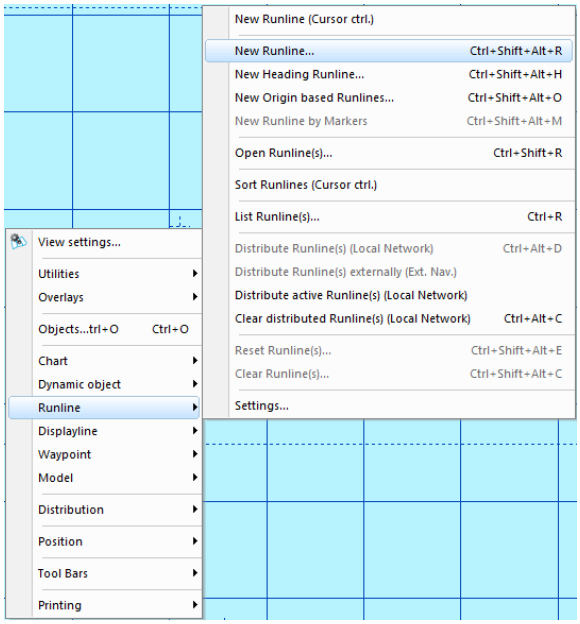


Figure 19 - New Runline

or from the menu bar you can select **<View>, <Runline Control>, <Runline> and <New Runline>,**or you can right-click the **<Runline Control view Window>** and select **<Runline>** and **<New Runline>.**

All three methods will result in the following dialog:

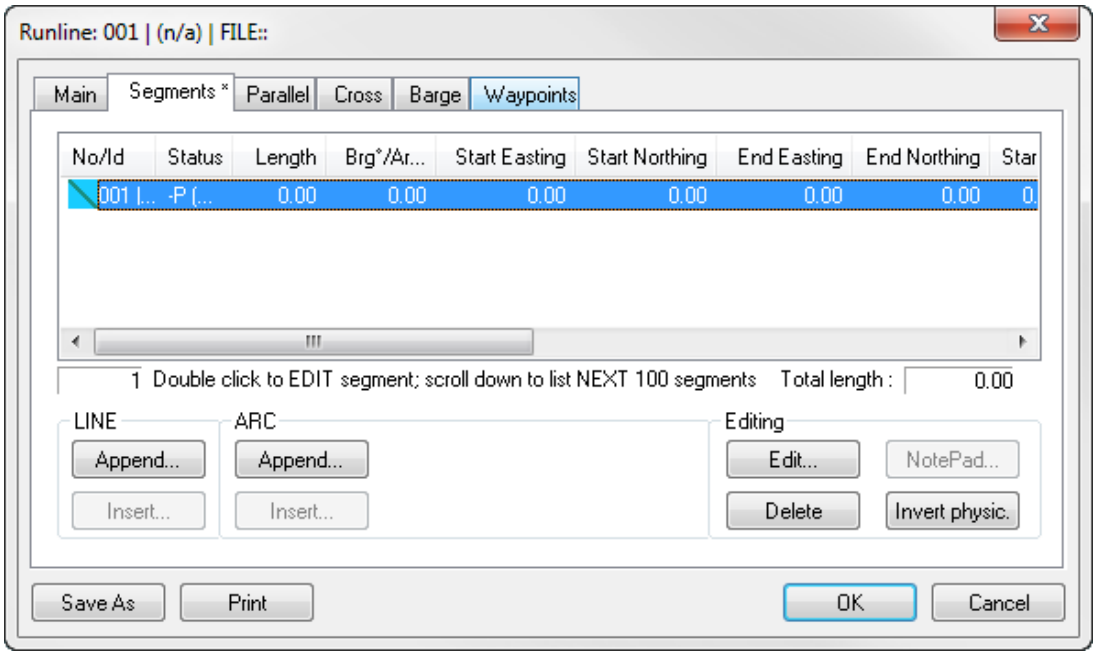


Figure 20 - Runline Edit Dialog

The Runline edit dialog shows a single segment with start and stop coordinates 0,0. To enter the parameters for your Runline press **<Edit>** or double click the segment, and the following dialog will appear:

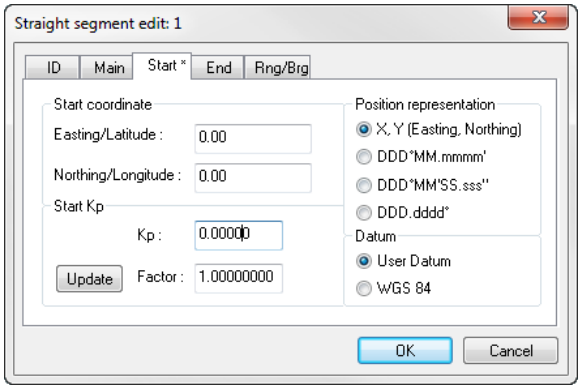


Figure 21 - Runline segment edit dialog

In this dialogue you have a tab for entering start coordinates of the Runline, and a tab for entering end coordinates of the Runline. There is also a tab for entering range and bearing from the start point to the end point.

Facilities are also available for entering coordinates in Latitude / Longitude and in User datum or WGS84.

Once the coordinates have been input, you must press **<OK>** to return to the Runline edit dialog.

From the Runline edit dialog you can either press **<OK>** and the Runline data will be stored in memory only and displayed on the Helmsman's Display. If you want to save the Runline data on a file you must select the **<Main>** tab, and insert a name in the field: **<Runline name>.** After inserting the name press **<OK>,** and save the file in a directory of your selection. The default directory for Runline data is: C:\Eiva\NaviPac\Runlines

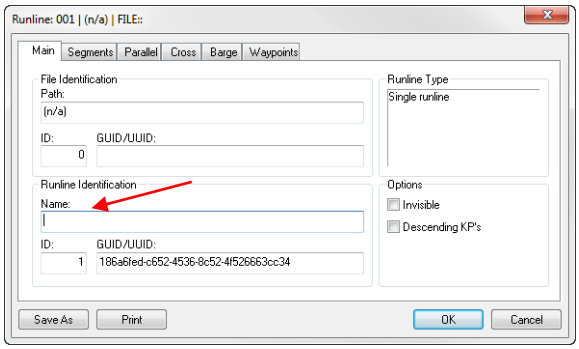


Figure 22 - Runline name entry

2.4.2 Manual created Runline (continuous Runline)

If a Runline consists of several segments, more segments can be added from the Runline edit dialog. The first segment in a continuous Runline series is entered as described above. When more segments should be added, you must point at the last segment entered, and press **<Append>**.

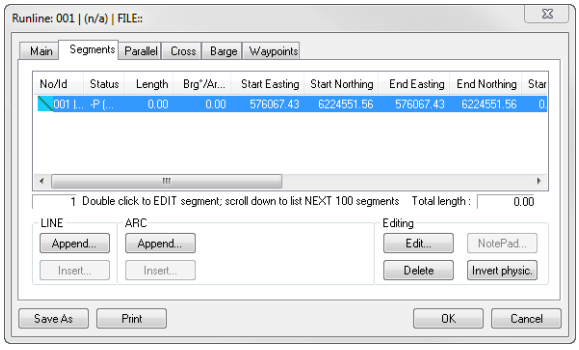


Figure 23 - View Runline segments

A dialog for entering the endpoint parameters of the next segment will appear:

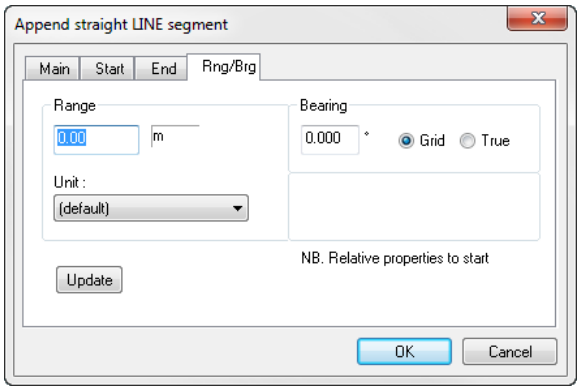


Figure 24 - Append line segment

You can enter range/bearing from the endpoint of the previous segment to the endpoint of the present segment, or select the **<End>** tab and enter the end coordinates of the present segment. If many segments are entered, the Runline edit dialog will look like this.

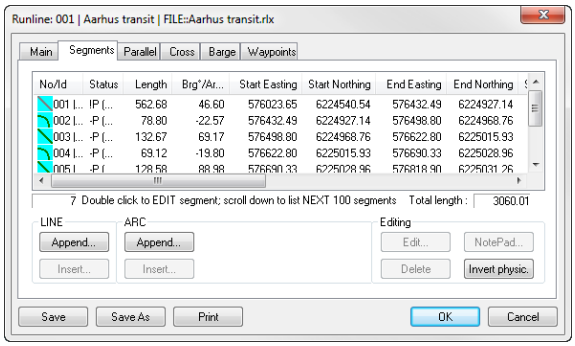


Figure 25 - Runline view window

2.4.3 Cursor created Runline

Cursor created Runlines are very useful if you have some kind of background information on the Map View, like C-Map. Let us assume that you have to enter the centerline for a route survey. First you must right-click the Map View and select: **<Runline>** and **<New Runline (Cursor ctrl.)>**

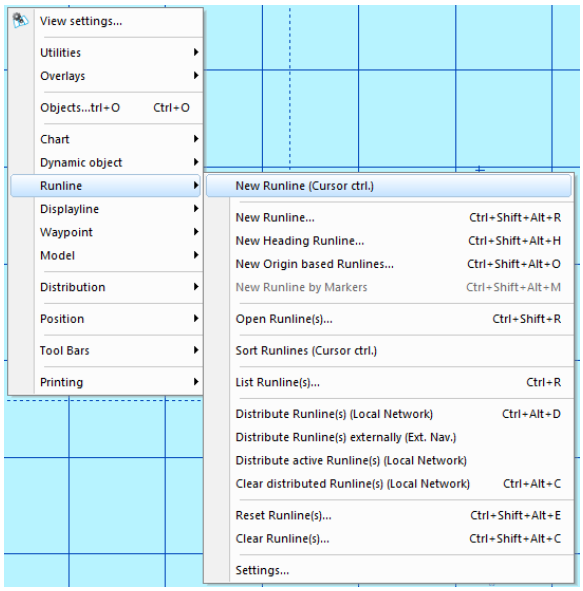


Figure 26 - New Runline created with cursor clicks

The cursor will turn into a cross. Move the cross to the position where the line should start and double click. You can now move the cross to the next turning point and single click. Every time you single click you will create an endpoint of a segment. To end the line you must double click.

Use <spacebar> to toggle between segment types, i.e. tangential arc segment, tangential straight segment, direct/normal straight segment

While entering a cursor created Runline, you can press the **<+>** and **<->** button to scale up and down, and you can scroll the centre wheel to change level on the C-Map.

If you move outside the map, the map will follow the cursor. This should be done very carefully, otherwise the cross icon will relocate to the centre of the map. Doing this multiple times in a row will move the map and you may get “lost.” To return, remember that you can click the **<Autocentre>** button to begin tracking your vessel again.

If you want to delete segments, you can press the **<DELETE>** key and the last segment will be deleted.

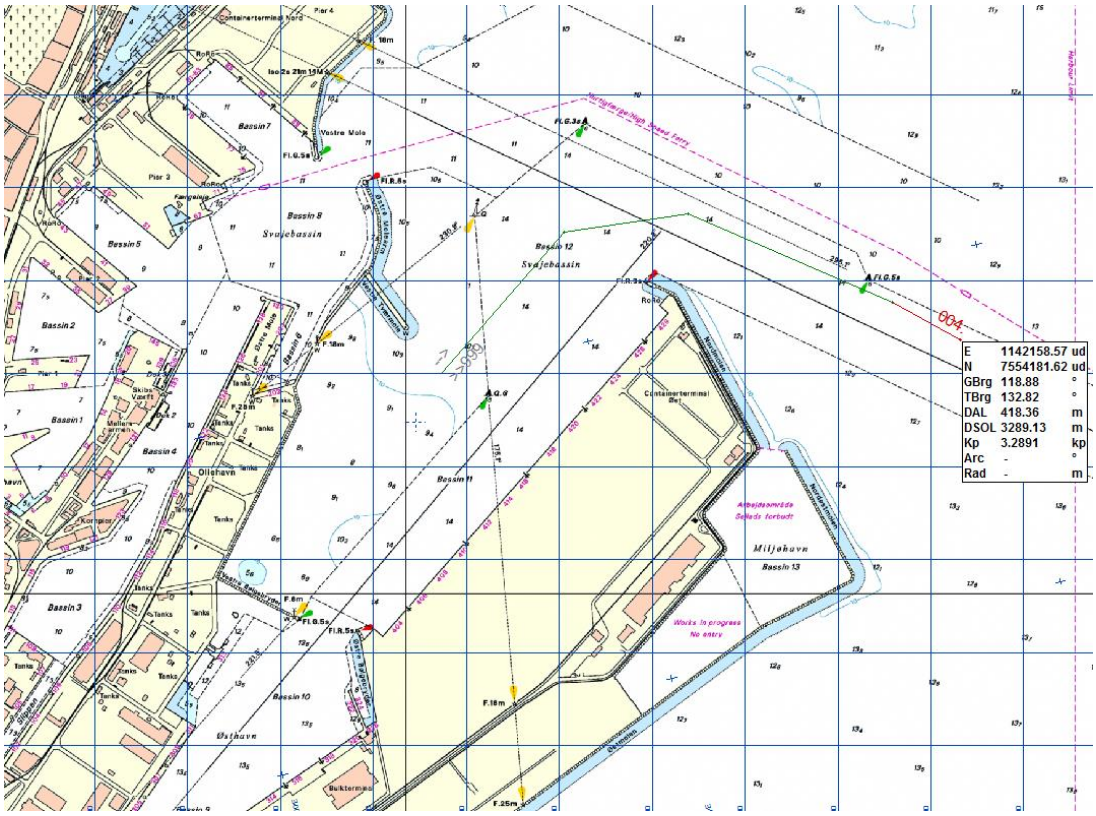


Figure 27 - Section of Map View with created Runline (green)

2.4.4 Loading Runlines from file

To load Runlines already stored in a file, you can either:

- Select **<View>** from the menu bar and thereafter **<Runline Control>**, **<Runline>** and **<Open Runline…>**
- Right click the Map View and select **<Runline>** and **<Open Runline>**
- Right click the Runline Control view and select **<Runline>** and **<Open Runline>**
- Drag and drop a Runline into the Map View window (skips following menu)

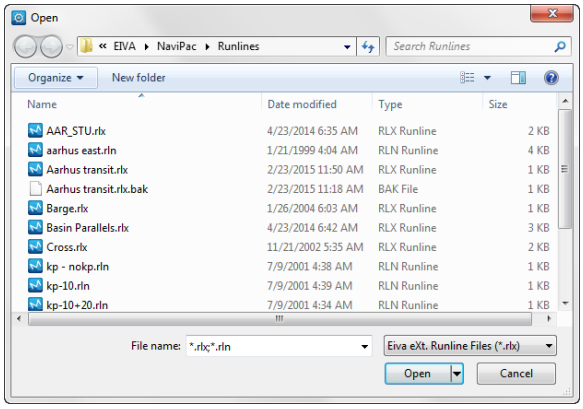

Open
EIVA ▸ NaviPac ▸ Runlines
Search Runlines
Organize
New folder
Name
Date modified
Type
Size
AAR_STU.rlx 4/23/2014 6:35 AM RLX Runline 2 KB
aarhus east.rln 1/21/1999 4:04 AM RLN Runline 4 KB
Aarhus transit.rlx 2/23/2015 11:50 AM RLX Runline 1 KB
Aarhus transit.rlx.bak 2/23/2015 11:18 AM BAK File 1 KB
Barge.rlx 1/26/2004 6:03 AM RLX Runline 1 KB
Basin Parallels.rlx 4/23/2014 6:42 AM RLX Runline 3 KB
Cross.rlx 11/21/2002 5:35 AM RLX Runline 2 KB
kp - nokp.rln 7/9/2001 4:38 AM RLN Runline 1 KB
kp-10.rln 7/9/2001 4:39 AM RLN Runline 1 KB
kp-10+20.rln 7/9/2001 4:34 AM RLN Runline 1 KB
File name: *.rlx;*.rln
Eiva eXt. Runline Files (*.rlx)
Open
Cancel

Figure 28 - Open Runline window

Select the Runline you want to use and press **<Open>.**

2.5 Start/stop Runlines & recording

After you have either manually entered a Runline or selected a Runline from a file, the Runline will appear on the Helmsman's Display as a green line, but no steering information is available yet.

You must press the <**Start>** icon on the Survey Bar, and the Runline will turn yellow and steering information will be available.

Figure 29 - Runline Control icon bar (unselected line)

To start recording/logging of data, you must press <**Start>** once more, and the Runline will turn red.

NOTE: The LogData program must be running to record and store data. If the LogData program is not running no data will be recorded.

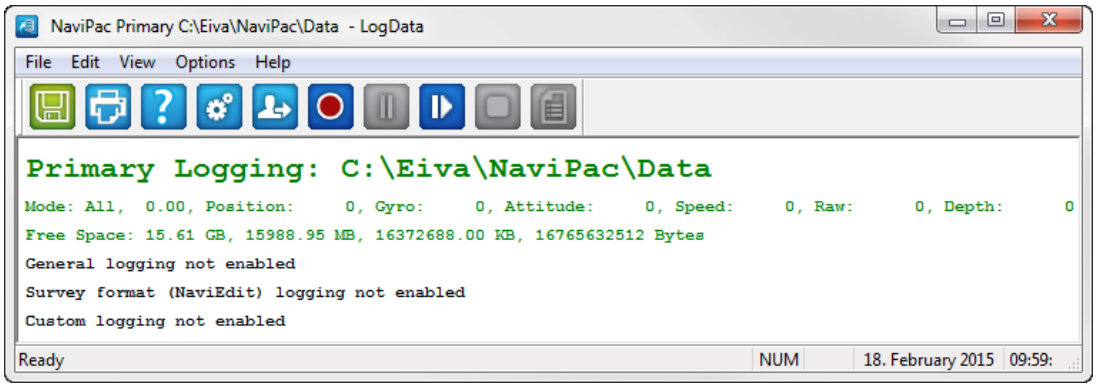

NaviPac Primary C:\Eiva\NaviPac\Data - LogData
File Edit View Options Help
Primary Logging: C:\Eiva\NaviPac\Data
Mode: All, 0.00, Position: 0, Gyro: 0, Attitude: 0, Speed: 0, Raw: 0, Depth: 0
Free Space: 15.61 GB, 15988.95 MB, 16372688.00 KB, 16765632512 Bytes
General logging not enabled
Survey format (NaviEdit) logging not enabled
Custom logging not enabled
Ready
NUM
18. February 2015 09:59:

Figure 30 - Log data window

To stop recording/logging of data, you must press <**Stop>.** The Runline colour will turn grey meaning the Runline is surveyed.

Figure 31 - Runline Control icon bar (logging line)

3 INTRODUCTION TO THE NAVIPAC HELMSMAN'S DISPLAY

The NaviPac Helmsman's Display is quite versatile, as it can be used for a various number of operations. It gives the helmsman a tool for active steering control, that is to visualize and display the current position of the vessel/ship and offsets in 2D. The Helmsman's Display can be used for survey preparation when Runline-planning and for active surveying on line. Also plotting facilities of recorded data are available.

To distinguish between a dynamic real time situation with consecutive position updates and an option for standalone operations, such as survey preparation or plain and simple chart displaying, the NaviPac Helmsman's Display comes with 2 upstart modes: **Line planning mode** and **Surveying mode**.

The two modes have their own set of window settings, which are saved in the Windows NT registry database (if saved by the operator). It is therefore possible to operate with two sets of active views in the Helmsman's Display.

- Line planning mode: Only one Map View and a cursor position view
- Surveying mode: Two or more drawing views, a left/right indicator view and several data views.

3.1 Line planning mode (Off-line)

The Line planning mode is for survey preparations: to generate all relevant job files, such as runline files, waypoint files, displayline files, etc.

The term *offline* in this context means that the Helmsman's Display is *not* connected to the NaviPac kernel, and can run as a stand-alone program. You can tell when Helmsman's Display is in Line planning mode by looking at the status bar. "Offline" will be shown in yellow, there will also be a yellow light in the top bar.

All offline line planning facilities are also available in the Surveying mode.

3.2 Surveying mode (online)

- The surveying mode is used for real time display of vessel and offset positions. The term *online* in this context means that the Helmsman's Display is connected to the NaviPac kernel, and is receiving data from the kernel. You can tell when Helmsman's Display is in line planning mode by looking the top bar. A green light means data connections are healthy. Check your data view windows to verify the data is accurate. Down on the status bar "Master" will be shown in green, or "Slave" in red will notify you if you are the primary instance of Helmsman's Display.

4 PROGRAM OVERVIEW

In this chapter an overview of the NaviPac Helmsman's Display program will be outlined, e.g. the main window and all menu functions will briefly be described.

4.1 Helmsman's Display main window

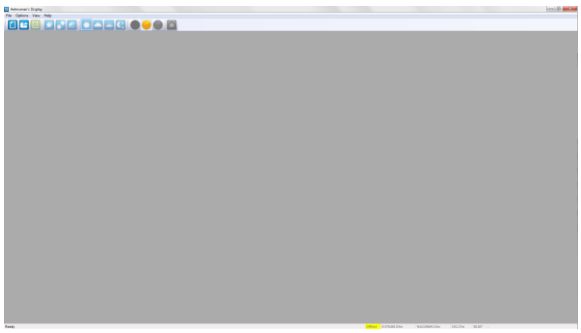


Figure 32 - Offline Helmsman's Display window

As illustrated above NaviPac Helmsman´s Display is more or less a self-contained GUI program. The primary purpose is to help the surveyor and vessel operators.

4.2 Menu function overview

The Helmsman´s Display program holds five pull-down menus: File, Options, View, Window and Help which will be briefly described below.

4.2.1 File menu

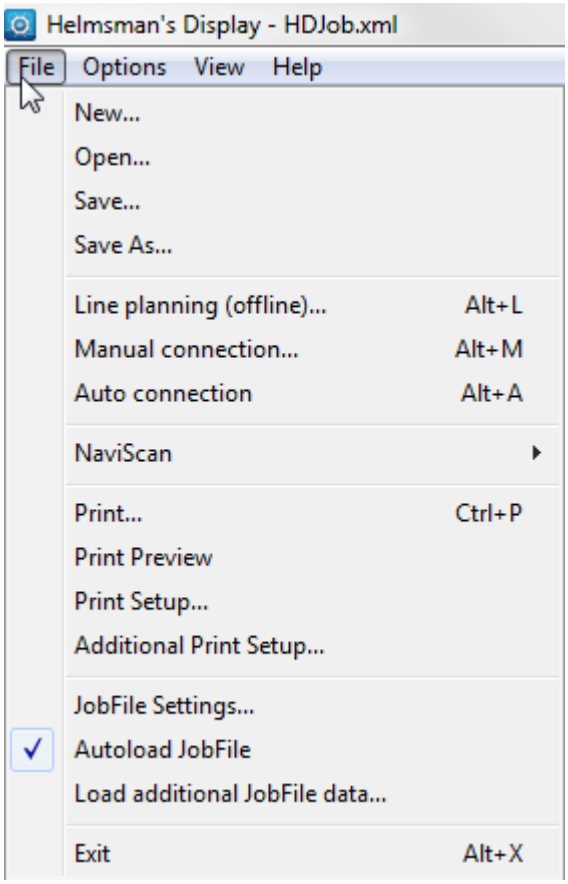


Figure 33 - File menu

New: Opens new Helmsman's Display job file

Open: Open existing Helmsman's Display job file (.xml)

Save: Saves current job file, if unnamed it will prompt **<Save As…>**

Save As: Opens dialog to save Helmsman's Display job file

Line planning (offline): Starts the Helmsman's Display in line planning mode. It will not be connected to NaviPac kernel (offline).

Manual connection: Starts the Helmsman's Display in surveying mode. A dialogue pops up to allow the operator to enter an IP-address (and a port number). If the NaviPac kernel is running locally, the operator needs only to switch on the local check box before connection, otherwise the operator must know the exact IP-address of the NaviPac host computer.

Auto connection: Automatically starts the Helmsman's Display in surveying mode. The first time the Helmsman's Display is started this menu item is not enabled, so the operator has to enter an IP-address of the NaviPac host computer before it can be automatically started.

NaviScan: Connect/disconnect to or from NaviScan to get echo sounder centre beam depth. The depth is absolute, e.g. RPH corrected.

Print: Print active (focused) Map View.

Print preview: Preview print of active (focused) Map View (the preview function is not very accurate).

Print set-up: Select and set-up the printer.

Additional Print set-up: Select tile subdivisions for smaller printing.

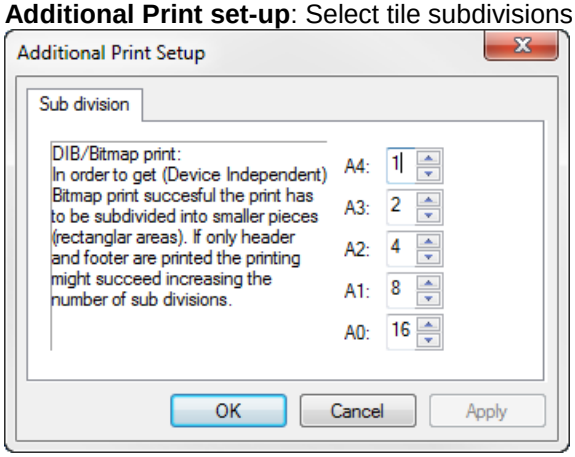

Additional Print Setup
Sub division
DIB/Bitmap print:
In order to get (Device Independent) Bitmap print succesful the print has to be subdivided into smaller pieces (rectanglar areas). If only header and footer are printed the printing might succeed increasing the number of sub divisions.
A4: 1
A3: 2
A2: 4
A1: 8
A0: 16
OK
Cancel
Apply

Figure 34 - Addition print setup window

JobFile settings: From here you can also select whether or not to auto load this file. Additionally, setting for Runline ID numbers are under the Runline ID Counter tab.

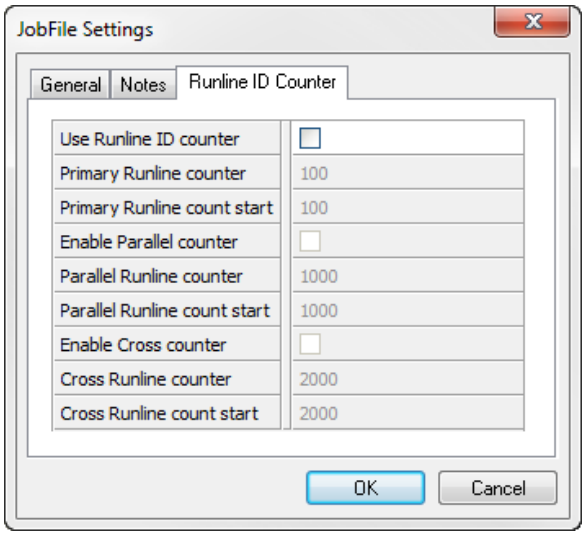


Figure 35 - Jobfile settings window

Autoload JobFile: Click to toggle setting on/off, will load previously loaded JobFile automatically.

Load additional JobFile data: Allow you to load data contained in multiple job files, but typically accelerator key definitions, select the job file you wish to combine. Items will be added from second job file but most current settings will not be overwritten.

Exit: Terminate the Helmsman's Display. You will get a chance to abort the termination.

4.2.2 Options menu

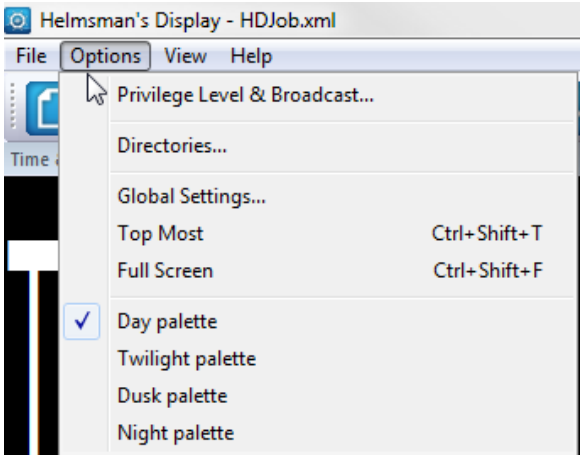


Figure 36 - Options menu

Privilege level & broadcast: Opens the Helmsman's Broadcast window.

Directories: Open a dialogue for directories set-up. This allows the user to define the locations of the $EIVAHOME location as well as the default locations of waypoints, Runlines, displaylines, DTM's and C-Map files.

Global settings: Opens the Helmsman Global Settings Dialog where you can edit the global properties and auto distribution settings.

Top most: Select to make the Helmsman's Display on top at all times. No windows can be on top of the main window.

Full screen: Sets the Helmsman's Display to full screen mode removing the top menu bar. From this mode, **<Window Key + up/down arrow keys**> to min/max the screen. If it is minimised all the way to the taskbar the keys stop working. You can exit full screen mode with the key command **<CTRL+SHIFT+F>** (this will also toggle on/off).

Palettes: The palette settings can be selected in the menu or directly from the icons. These palettes can only be used when using the logical palette in the colour settings.

Figure 37 - Colour palette

- **Day palette**: Bright colours for day settings
- **Twilight palette**: Less bright colours for day settings
- **Dusk palette**: Less dark colours for early night settings
- **Night palette**: Dark colours for night settings

4.2.3 View menu

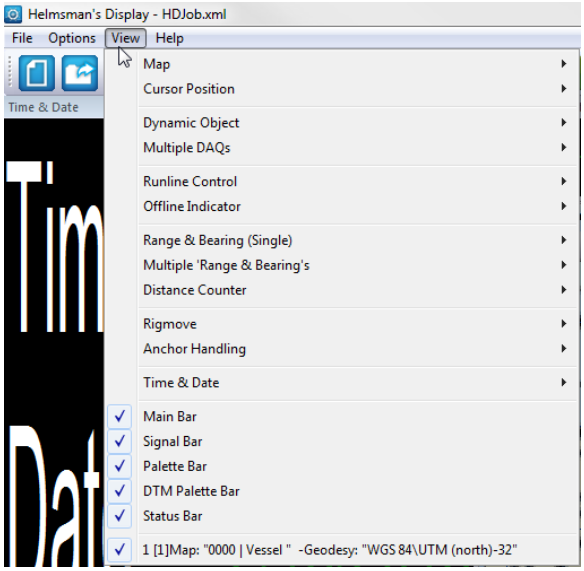


Figure 38 - View menu

Map: Open a new Map View or edit settings for the focused Map View similar to right clicking on the Map View window.

Cursor position: Open a window or edit settings for the Cursor position view. This window shows the position of the cursor in Lat/Lon or grid coordinates. If Runline is loaded, it can also display KP and distance off line of the cursor.

Dynamic object: Open a window or edit settings for the Dynamic object view. This window shows the position of the selected dynamic object. Choose which object to track inside the view settings.

Multiple DAQ's view: Open a window or edit settings for the Data acquisition view. This window shows data from sensors installed in the data acquisition field of NaviPac Config. Multiple data acquisition sensors can be viewed at once in this view.

Runline Control: Open a new window or edit settings for the Runline Control view. Managing Runlines and DP waypoints is also possible from this menu. If a Runline is loaded you can select tools to convert KP to position and position to KP.

Offline indicator: Open a new window or edit settings for the offline indicator view.

Range & bearing (single): Open a new window or edit settings for the range & bearing view. You can add one range and bearing from any dynamic object or waypoint to any other dynamic object or waypoint.

Multiple range & bearing: Open a new window or edit settings for the multiple range & bearing view. You can view multiple ranges and bearing information from any dynamic object or waypoint to any other dynamic object or waypoint.

Distance counter: Open a new window or edit settings for the distance counter view. Starting and resetting the distance counter is also possible from this menu.

Rigmove: Open a new window or edit settings for the rigmove view. Right click on the window to begin setting up the rigmove window.

Anchor handling: Open a new window or edit settings for the anchor handling view. Right clicking on the window will allow you to edit settings and Runline settings.

Time & date: Open a new window or edit settings for the time & date view. Time can be displayed in local and UTC time.

Toolbar views: Select to toggle each individual status bar on/off. Bars that are on will have a check mark next to them in the margin.

Data views: Dynamically change the menu items depending on views currently opened.

4.2.4 Help menu

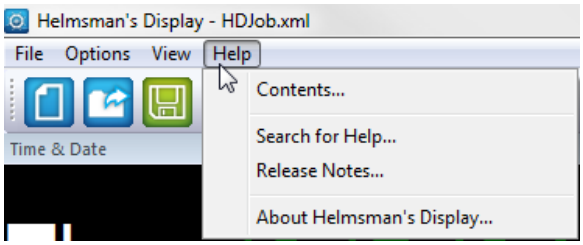


Figure 39 - Help menu

Contents: Opens the Internet Explorer with User's Guide to NaviPac Helmsman's Display.

Search for help: Performs a Google search for the subject on the website eiva.com

Release notes: Opens an .XML file in a browser or XML viewer and displays the release notes for Helmsman's Display's current version (probably IE compatible only).

About Helmsman's Display: Opens an about dialogue with version number.

4.3 Tool bars, Status bar & DTM Palette bar

There are three toolbars available giving the operator shortcuts for some primary functions. The toolbars are: **Main bar**, **Palette bar** and **Signal bar**. As default the toolbars are attached to the main GUI frame at the topside but they can be attached to any side of the mainframe. All toolbars can also be detached from the mainframe (floating), acting like any other Windows NT window.

Figure 40 - Helmsman's Display menu and toolbars

4.3.1 Main bar

The Main bar holds shortcuts (buttons) for the two helmsman modes e.g. Line planning mode and Surveying mode (manual and auto connection). The last button is for saving the current settings of all active (opened) views, e.g. window positions, sizes, colours, etc. See 5.5 The Main bar

Figure 41 – Main bar

The Main bar can be switched on and off in the data view menu.

4.3.2 Palette bar

The Palette bar holds shortcuts (buttons) for the various day and night palettes available. They only have effect if the alternative palette is used in all colour settings. The Windows system palette is by default active but when using C-MAP charts the alternative palette is always active.

Figure 42 - Palette bar

The Palette bar can be switched on and off in the data view menu.

4.3.3 Signal bar

The Signal bar is not a traditional toolbar but rather an info bar telling the status of the last received position. The signals are also seen in the NaviPac Online program and are: **Green** (positions are ok), **yellow** (positions are bad but usable) and **red** (positions are bad and not usable), but this signal bar differs from the Online counterpart as this signal is controlled by the navigation state of the selected auto.centered dynamic object.

Figure 43 - Signal bar

The Signal bar can be switched on and off in the data view menu.

4.3.4 Status bar

The Status bar is not a toolbar but just a plain info-bar telling the position in either Easting/Northing or Latitude/Longitude, the range and bearing from the reference position to the cursor position, the helmsman operator mode and the date and time.

Figure 44 - Status bar

The Status bar can be switched on and off in the data view menu.

4.3.5 DTM Palette bar

With the DTM Palette bar the colours of the Digital Terrain Model can be adjusted. The Start value defines where the first colour band should begin (minimum depth value) and the step defines when the next band will begin. For example if a colour band has 16 colours (max is 256) with a Start of 0 and a Step of 0.5, each band will represent 1m from 0-8.5m. With a start of 10 and step of 1, each band will represent 1m from 10-26m.

The DTM Palette bar can be switched on and off in the data view menu.

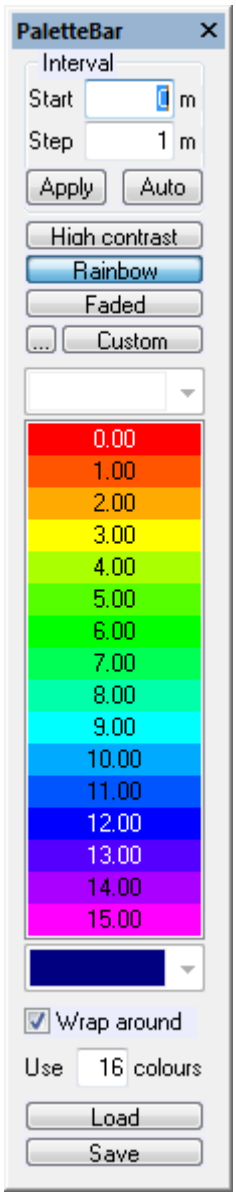


Figure 45 - DTM palette bar

5 DETAILED FUNCTION DESCRIPTION

This chapter will describe the different menu functions in the NaviPac Helmsman's Display in detail. Dialogues that appear when the user selects a function will be outlined by a figure and an explanation of the different fields and buttons.

5.1 File menu

All connection and printing facilities are placed in this menu.

5.1.1 Line planning (offline)

If you are online, you can switch to offline by selecting this option. The following dialog will confirm that you want to disconnect from NaviPac.

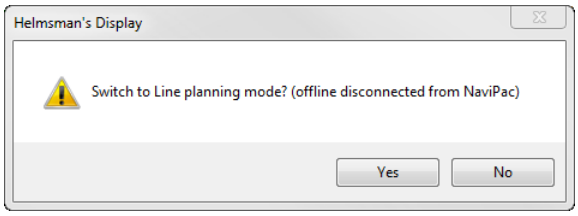


Figure 46 - Offline notification

5.1.2 Surveying manual connection

When selected, the following dialogue will appear:

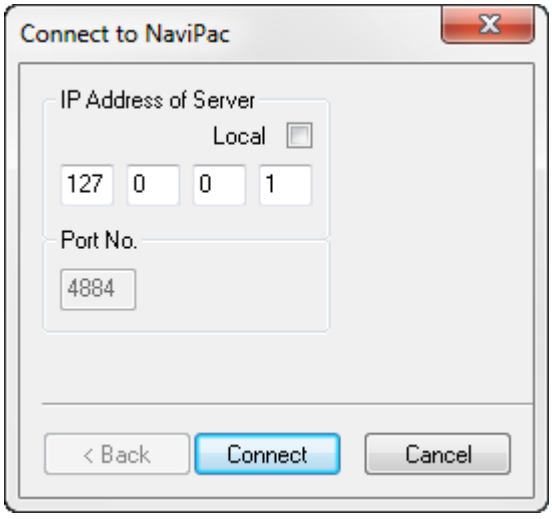


Figure 47 - Connect using NaviPac server IP or Local IP address

IP address of server: IP address of the computer where the NaviPac kernel is running. At least the very first time the Helmsman's Display is running the IP address must be entered.

Local: Switch on, if the NaviPac kernel is running locally (on the same computer as the Helmsman's Display). The IP address will automatically change to 127.0.0.1.

Port number: Port number through which to establish NaviPac kernel communication. Change of port number is rarely needed, and can only be done in the NaviPac.ini file.

5.1.3 NaviScan menu

If the operator wants echo sounder centre beam depth information directly, the operator can connect to NaviScan to accomplish this. The depth received is absolute, e.g. RPH corrected. The depth received will be shown in the speed and course data view.

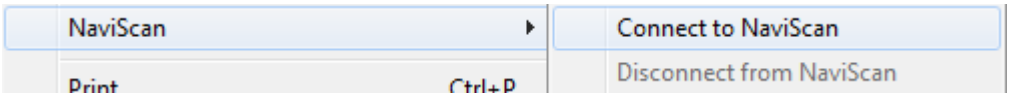


Figure 48 - Connect to NaviScan option

When connecting to NaviScan a connection dialogue will pop up and the operator must enter the IP address of the NaviScan computer:

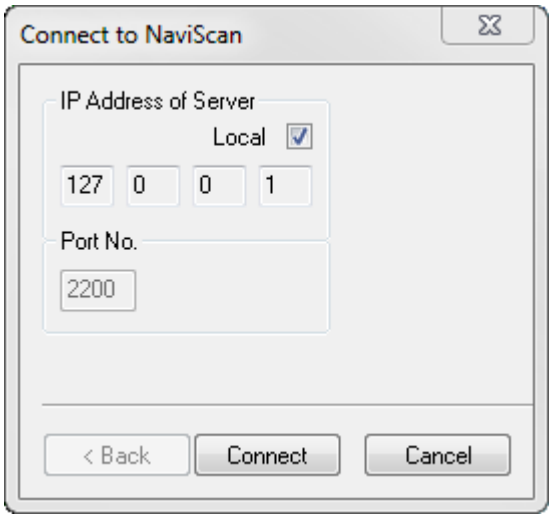


Figure 49 - Connect using NaviScan server IP or Local IP address

IP address of NaviScan computer: IP address of the computer where the NaviScan program is running.

Local: Switch on, if the NaviScan program is running locally (on the same computer as the Helmsman's Display). The IP address will automatically change to 127.0.0.1.

Port number: Port number through which to establish communication to the NaviScan program. Change of port number is rarely needed.

5.2 Options menu

5.2.1 Privilege level & broadcast

When selected the following menu will appear:

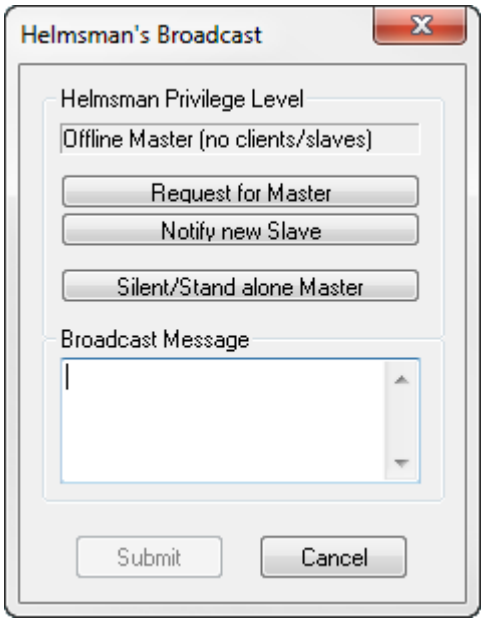


Figure 50 - Helmsman's Broadcast window

- **Request for Master:** If Slave, you can request control from current Master, approval is needed or Master control will be reverted.
- **Notify new Slave:** If Master, select and notify Slave, Master can be requested and attained without approval needed (also Slave may force the master to perform a global redistribution by re-selecting this item).
- **Offline:** Go offline, into line plan mode. If the Master goes offline any Slave can request Master without approval needed.

5.2.2 Directories

When selected the following menu will appear:

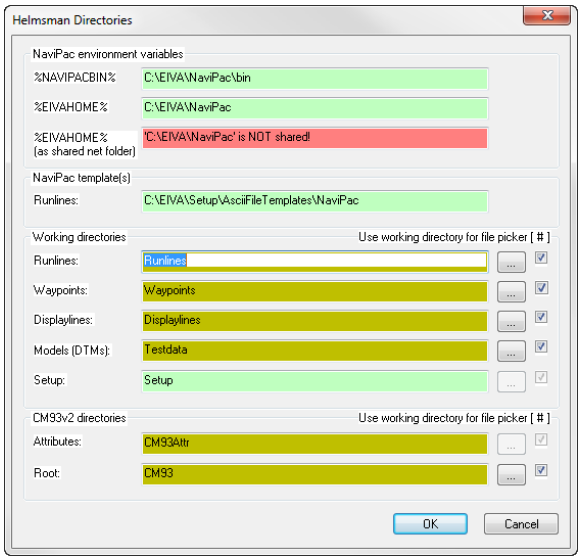


Figure 51 - Helmsman directories window

The %EIVAHOME% is a Windows system environment variable which will be defined during installation. The helmsman's directories are default relative to %EIVAHOME%, but can be changed to a different and absolute (full) path. One exception is the **CM93v2 root** which typically is a path to a directory on a CD supplied from C-Map, but the directory can be set relative to %EIVAHOME% too (for demo purposes only).

5.2.3 Global Helmsman settings

When selected, the following menu will appear:

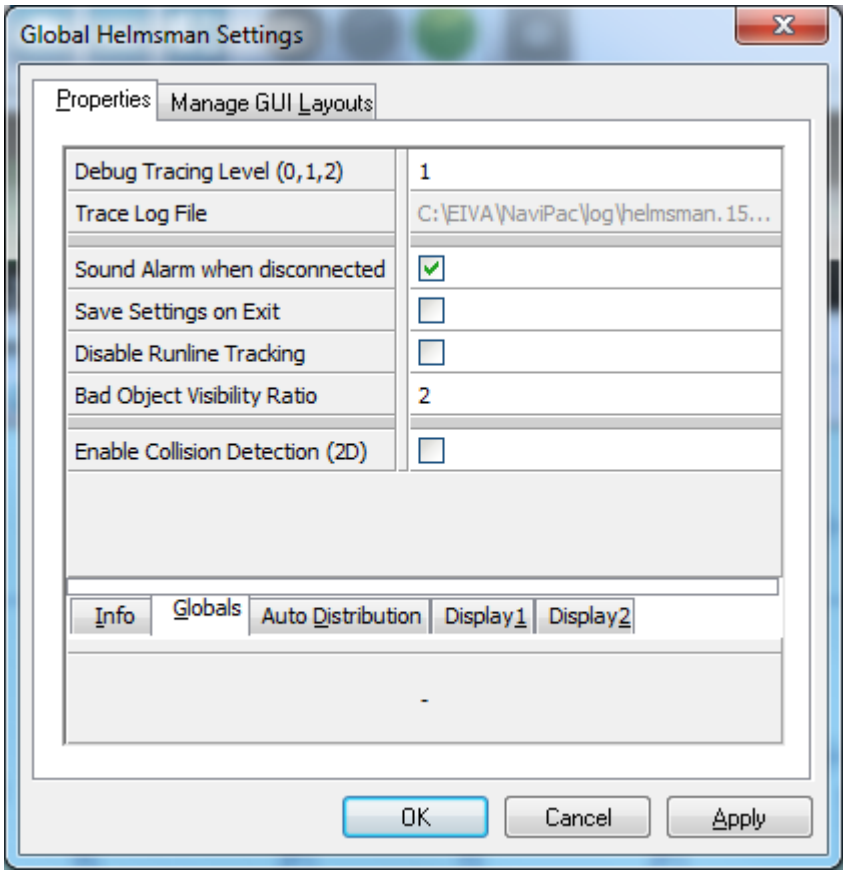


Figure 52 - Global Helmsman settings

Info: Find details of the computer name and IP address.

Globals: Options for debug trace (0,1,2), collision detection, autosave on exit, and alarm when disconnected.

Auto.distribution: Allows the user to enable auto distribution when creating or making changes to Helmsman Display objects like waypoints or Runlines.

DisplayX: The following display tabs will vary depending on the monitor(s) plugged-in to the video card installed on your PC. Each display will have resolution settings in mm to obtain true map scale, especially if using widescreen monitors. Override auto.detected screensize if graphics are out of scale, e.g. overhead projectors may need overriding to smaller values (=a smaller monitor).

5.3 View menu

From the View menu, you can open new views and you can edit the settings of views that have focus. It is also possible to edit Runlines and waypoints from the Runline Control view.

5.3.1 Map View menu

These settings can also be accessed by right clicking on the Map View window.

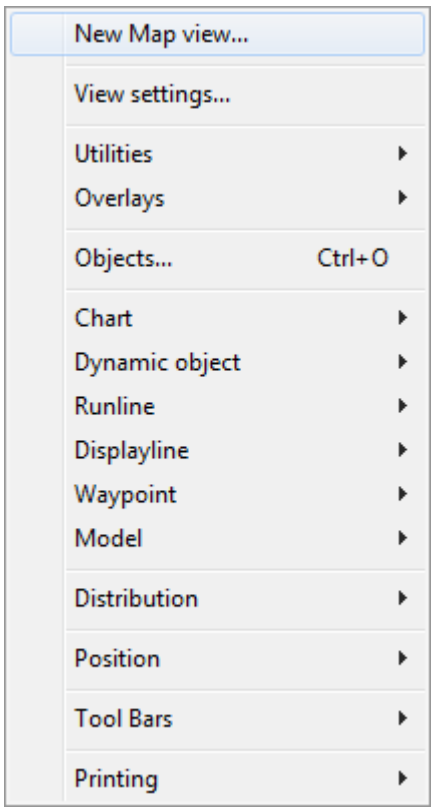


Figure 53 - Map View menu

5.3.1.1 New Map View

New Map View has five tabs:

Tab 1: Map rotation/options

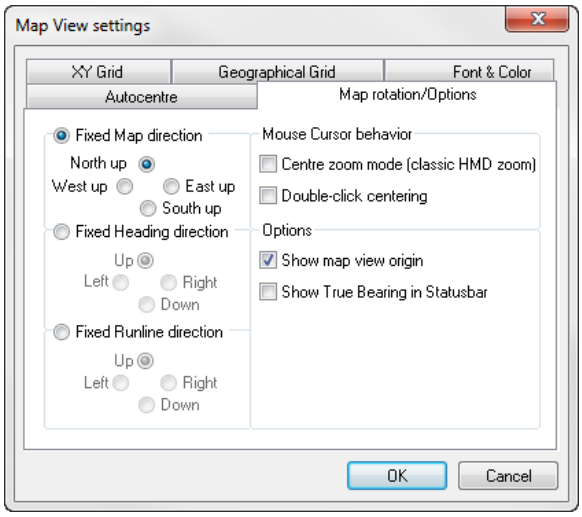


Figure 54 - New map, rotation/options

Fixed map direction: Is default 'North up' but can be changed to West, East or South.

Fixed heading direction: When enabled, the vessel heading is either Up, Down, Left or Right.

Fixed Runline direction: When enabled, the vessel heading is set relative to the selected Runline. The heading will adjust as the Runline segments become selected.

Centre zoom mode: Classic HMD zoom: Scroll wheel zooms around the center of the map. With this box unchecked, the scroll wheel will zoom in and out around the location of the mouse pointer.

Double click centering: When enabled, double clicking on the background will move the location that was double clicked to the centre of the map**.** Note: This must be done on a black background, if you double click on a DTM, you will see the DTM view settings instead of re-centering.

Show map origin: Enabling this will draw a dashed cross in the centre of the map.

Show true bearing: Enabling this will show the true bearing from the vessel to the status bar. It will be noted with a "t" before the value: t115.3 °.

Tab 2: Map rotation/options

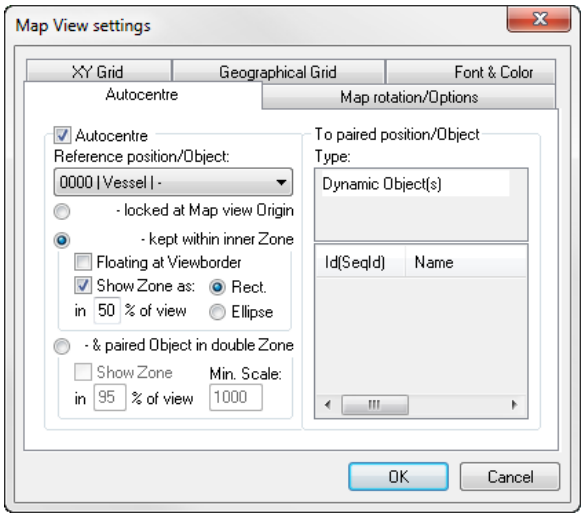


Figure 55 - New map, Autocentre

Autocentre, reference position: With this option you can select which object should control the Autocentre facility of the map. If Autocentre is not enabled, you can change the map centre by single clicking the map. The position you single click will become the new map centre.

Autocentre, locked at map origin: With this enabled, the vessel object will stay in the centre of the Map View, and the background will move behind the vessel. This facility should be used with care, as it requires much computer power, especially if the C-Map chart is loaded.

Autocentre, kept within inner zone: This is the normal update mode. As soon as the vessel has moved outside a boundary rectangle, the map will update placing the vessel in the centre.

Autocentre, show and extent: With this option you can show the boundary rectangle on the map and adjust the size of the rectangle.

Autocentre, & paired object in double zone: Show both objects within the boundary rectangle, as the objects change in distance the map will auto scale to keep both objects visible.

Tab 3: X,Y grid

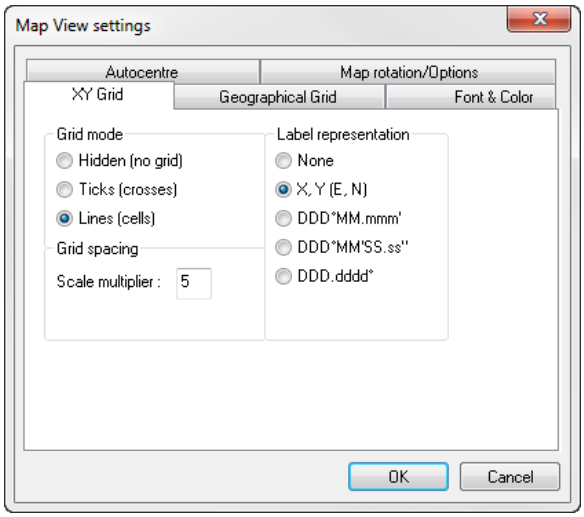


Figure 56 - New map, XY grid

Grid mode, hidden, crosses, lines: With this menu point you can select how gridlines should appear on the Map View.

Grid label representation, none: No labels will be plotted on the Map View.

Grid label representation, X,Y: The grid will be labelled with grid coordinates (Easting, Northing).

Grid label representation, DDD MM.MMM: The grid will be labelled with latitude, longitude in degrees, minutes and decimal minutes.

Grid label representation, DDD MM SS.ss: The grid will be labelled with latitude, longitude in degrees, minutes and seconds.

Grid distance, scale multiplier: With this option you can adjust the distance between the grid lines.

Tab 4: Geographical grid

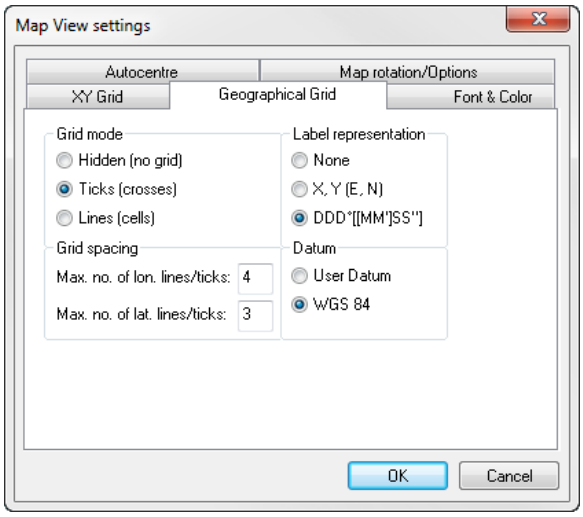


Figure 57 - New map, geographical grid

Datum – All menus are similar to XY grid with the exception of this one. The menu lets you select how gridlines should appear on the Map View. This radio button allows you to display grids based on WGS 84 or your selected user datum.

Tab 5: Font & colour

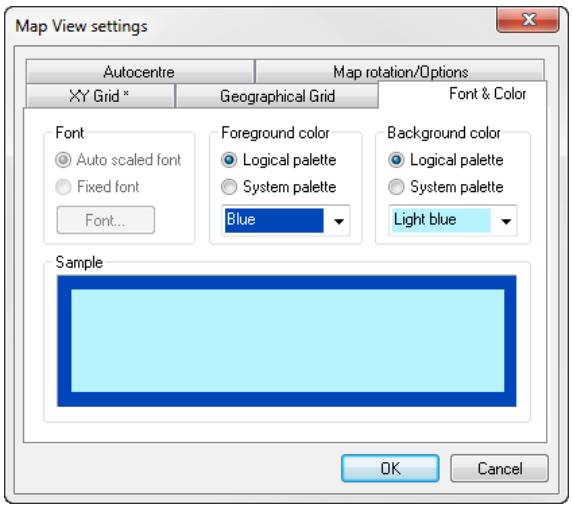


Figure 58 - New map, Font & Colours

Foreground /background colour, logical palette: When selecting colours from the logical palette, the chart colours will change when switching on the Day/Twilight/Dusk/Night palette bar. If system colours are used, the palette bar icons only adjust the data windows, the Map View background will remain the same.

Foreground /background colour, system: When choosing system colours, the chart colours will not change when switching on the EDIS palette bar.

5.3.1.2 View settings

The Map View Settings menu will appear. See 5.3.1.1 New Map View.

5.3.1.3 Utilities

Only one of the Ruler, Down marker, Up Marker utilities can be selected at once. Before a new method can be selected, the previously selected method should be unselected.

- **Ruler:** Middle click draws the standard range and bearing, but a ruler is left behind. At each end of the line is a “down” and “up” point. Each of these can be turned into a temporary waypoint and given an object, title, etc. Every time you draw a new ruler, the labels will appear in the new locations.
- **Down Marker**: Middle click draws the standard range and bearing, but a down marker is left at the origin point. This can be turned into a temporary waypoint and given an object, title, etc. Every time you draw a new ruler, the labels will appear in the new locations.
- **Up Marker**: Middle click draws the standard range and bearing, but an up marker is left at the destination point. This can be turned into a temporary waypoint and given an object, title, etc. Every time you draw a new ruler, the labels will appear in the new locations.
- **Static Range Circle**: Set the radius into the field. Entering a negative number will set the radius to the absolute value and allow the size to be altered by holding the shift key and scrolling with the middle mouse wheel. Activate this on the fly with **<CTRL+Middle scroll>.**

5.3.1.4 Overlays

Overlays are typically used when printing.

ScaleBar: Edit scale bar settings for display on screen and in print.

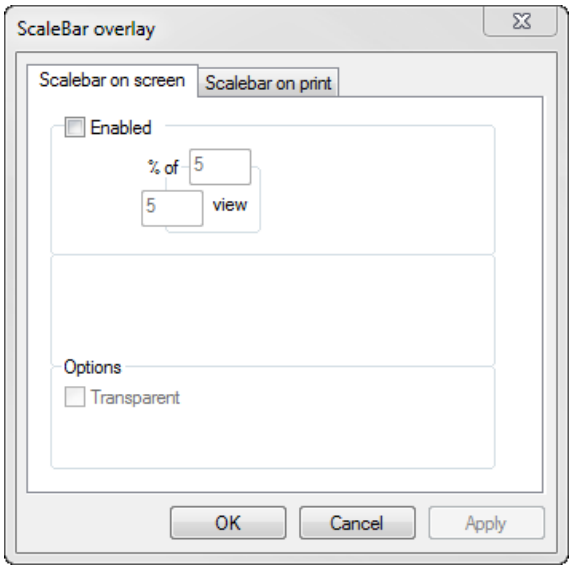


Figure 59 - ScaleBar Overlay

Palette: Edit scale bar settings for display on screen and in print, similar to scale bar window.

Text/legend overlays: Overlay a text file directly onto the Map View window. Shown below, npports.txt was loaded up showing the port settings on top of the Map View at all times.

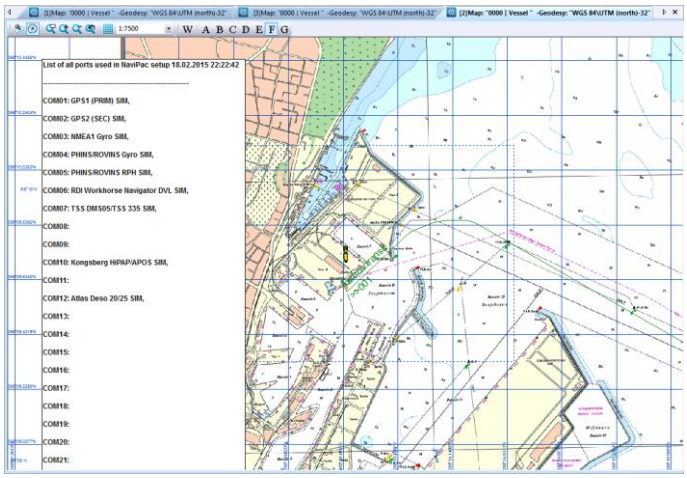


Figure 60 Map View with text file overlay displayed

5.3.1.5 Objects

A window, listing all objects currently displayed on the map, will appear.

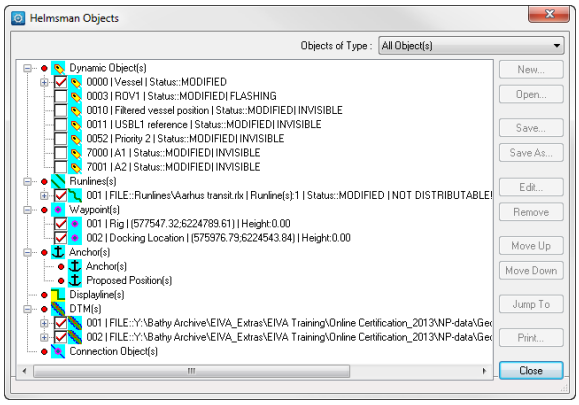


Figure 61 - All Helmsman objects view

By double clicking on the various objects, additional menus for adjusting the objects appearance will appear.

5.3.1.6 Chart

Three different digital chart types are supported:

- C-Map‘s CM93/2, which is near S57 edition 2 compliant (deprecated)
- C-Map’s CM93/3, which is full S57 edition 3 compliant
- SevenCs EC2007, which is full S57 edition 3 compliant

Also see the document ‘Add-on installation of ELECTRONIC CHARTS” (NaviPacAddonOfElectronicCharts.pdf) found at training.eiva.com for further information on this subject.

5.3.1.6.1 New CM93/2 subscription (deprecated)

A menu for opening a new C-Map subscription will appear.

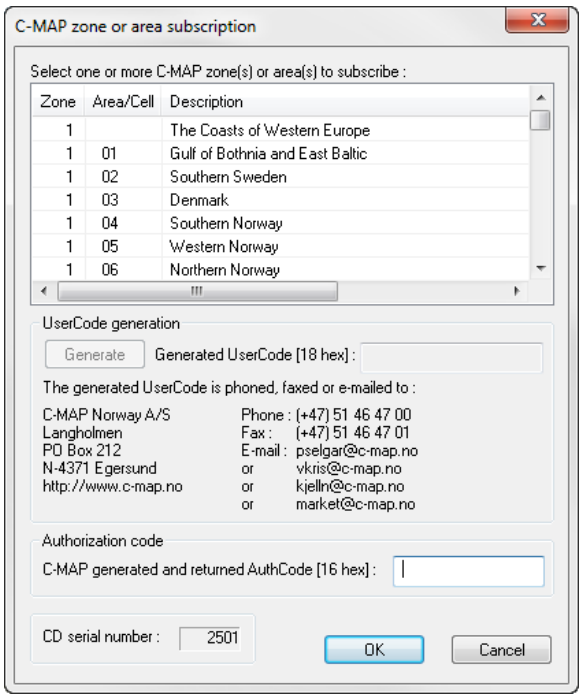


Figure 62 - New C-Map CM93/2 subscription window

C-Map divides the world into nine zones and each zone is also divided into a number of (sub)areas which are listed in the dialogue above. One or more zone(s) or one or more area(s) can be subscribed but not both zone(s) and area(s) at the same time - either zone(s) or area(s). For a complete pricelist for C-Map license(s) contact EIVA.

The above dialogue is used for entering the authorisation code to decode the digital charts from C-Map. This is only necessary the very first time the chart is opened, that is when the client has just gotten the authorization code from EIVA (or C-Map), which is a 16 hex-digit number, e.g. 1A2B3C4D5E6F7A8B. The entered authorization code will then be saved in a password file - making it unnecessary to re-enter the authorization code the next time the zone has to be opened.

If a client already has a C-Map license (to one or more zones) but is about to cross the border of a zone not subscribed, this dialogue can be used to open the approaching zone. Just select the wanted zone and generate a user code by clicking the <**Generate>** button. The generated 18 hex-digit number, e.g. 1A2B3C4D5E6F7A8B9C, user code is phoned, faxed or e-mailed to C-Map, and the returned authorization code is simply entered and the new zone is opened (if the client has a license to only *one* zone the former zone will *not* be opened too, but the client can of course re-enter the authorization code for the former zone any time he wants and thereby opens it).

After entering an authorization code and selecting level C (or levels below level C, e.g. D, E, etc.) and a chart does *not* appear in the Map View the authorization code is wrong! Simply re-enter the authorization code and *ensure* that all digits are entered as hex-characters and that exactly 16 digits are entered. If still no chart appears try entering the code in notepad to see if it corresponds to what you expect. If still having difficulties then contact EIVA.

5.3.1.6.2 Open CM93/2 chart (deprecated)

When a C-Map zone (or area) is subscribed and the authorization code is entered (see the above section) the operator can shortcut the opening process by selecting this menu item. The previously saved authorization code is read from the password file and used to decode the chart. If a chart then appears in the Map View when selecting level C (or levels below level C, e.g. D, E, etc.) the previously saved authorization code is correct. If no chart appears the authorization code is wrong and the operator has to re-enter an authorization code (see the section above).

5.3.1.6.3 Close CM93/2 chart (deprecated)

If the operator wants to remove the currently opened C-Map chart from the Map View the operator can select this menu item to do so. The chart is not removed from memory and can be quickly re-opened by selecting the Open CM93/2 chart menu item again.

5.3.1.6.4 New CM93/3 GeoDatabase

In order to access a CM93/3 GeoDatabase, it must be locally registered (and selected/make as default). A C-Map provided dialog application does this. The GeoDatabase itself may be found on a C-Map supplied CD or in folder...\EIVA\NaviPac\Databases\(xx) if user imported from S57 cells (see below).

If the operator wants to use/import already compiled CM93/3 cells, follow the steps to import the cell(s) as follows:

- Run ImportS57.exe from menu **<Start>; <NaviPac>; <ImportS57>.** If menu item is not available the CM93/3 runtime library has yet not been installed (Run Setup on NaviPac CD and check CM93/3 Runtime Library)
- Enter path to S57 edition 3 cell file(s); enter GeoDatabase prefix, e.g. FI for Finland; **<Execute>**
- If verification/compilation fails, the S57 edition 3 cell file(s) are not quite S57-3 compliant
- Register GeoDatabase (make default) from GDBAdmin.exe (run this menu item)

See the document ‘Add-on installation of ELECTRONIC CHARTS” (NaviPacAddonOfElectronicCharts.pdf) found at training.eiva.com for further information on this subject.

5.3.1.6.5 New CM93/3 subscription

In order to open up a CM93/3 GeoDatabase it must be registered at Jeppesen Marine (C-Map), Norway. If a license number is already known just enter it in the opened dialog application LicenseAdm provided by C-Map. If no license number is available then contact EIVA for further instructions.

See the document ‘Add-on installation of ELECTRONIC CHARTS” (NaviPacAddonOfElectronicCharts.pdf) found at training.eiva.com for further information on this subject.

5.3.1.6.6 Open CM93/3 chart

Opens a CM93/3 chart if a GeoDatabase is registered (and properly subscribed). Two different symbolizations are supported: C-MAP and S52.

5.3.1.6.7 Close CM93/3 chart

Closes the CM93/3 chart.

5.3.1.6.8 EC2007 Subscription

In order to open up an EC2007 Database it must be registered. If the required 2(3) licenses are already registered the below shown dialog will pop up. If no license strings are applied then the EC2007 ECDIS kernel license registration dialog will pop up. Enter valid license strings or just cancel if these are unavailable.

See the document ‘Add-on installation of ELECTRONIC CHARTS” (NaviPacAddonOfElectronicCharts.pdf) found at training.eiva.com for further information on this subject.

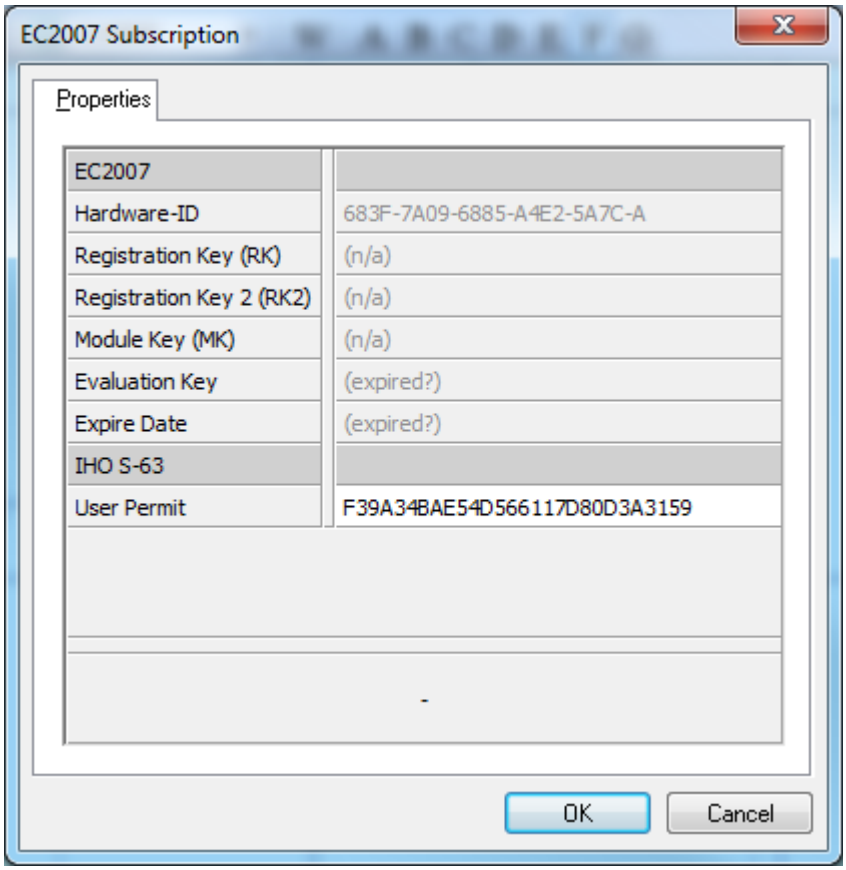


Figure 63 – EC2007 subscription

5.3.1.6.9 Register EC2007 Database

In order to access a SENC or ENC cell, it must be locally registered (imported). The SevenCs provided ChartHandler module is needed for this.

See the document 'Add-on installation of ELECTRONIC CHARTS" (NaviPacAddonOfElectronicCharts.pdf) found at training.eiva.com for further information on this subject.

5.3.1.6.10 Open EC2007 chart - xxx

Opens an EC2007 chart if a Database is registered. Three different symbolizations are supported: Traditional, Simplified and Inland ECDIS.

5.3.1.6.11 Close EC2007 chart

Closes the EC2007 chart.

5.3.1.7 Dynamic object

Any moving object is a dynamic object: your vessel, ROV, ROTV, other towed sensors or towfish.

5.3.1.7.1 Open dynamic object

From the following menu, it is possible to attach a file, describing the outline of the object. The file will open at the centre point where the map is currently placed.

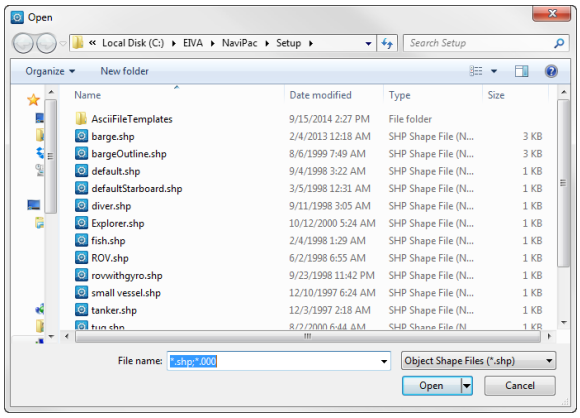

Open
Local Disk (C:) ▸ EIVA ▸ NaviPac ▸ Setup ▸
Search Setup
Organize
New folder
Name
Date modified
Type
Size
AsciiFileTemplates 9/15/2014 2:27 PM File folder
barge.shp 2/4/2013 12:18 AM SHP Shape File (N... 3 KB
bargeOutline.shp 8/6/1999 7:49 AM SHP Shape File (N... 3 KB
default.shp 9/4/1998 3:22 AM SHP Shape File (N... 1 KB
defaultStarboard.shp 3/5/1998 12:31 AM SHP Shape File (N... 1 KB
diver.shp 9/11/1998 3:05 AM SHP Shape File (N... 1 KB
Explorer.shp 10/12/2000 5:24 AM SHP Shape File (N... 1 KB
fish.shp 2/4/1998 1:29 AM SHP Shape File (N... 1 KB
ROV.shp 6/2/1998 6:55 AM SHP Shape File (N... 1 KB
rovwithgyro.shp 9/23/1998 11:42 PM SHP Shape File (N... 1 KB
small vessel.shp 12/10/1997 6:24 AM SHP Shape File (N... 1 KB
tanker.shp 12/3/1997 2:18 AM SHP Shape File (N... 1 KB
File name: *.shp;*.000
Object Shape Files (*.shp)
Open
Cancel

Figure 64 - Open dynamic object window

The object, having the file attached as an outline, is the object selected in the Map View settings menu.

5.3.1.7.2 List dynamic object

A window, listing all dynamic objects currently displayed on the map, will appear.

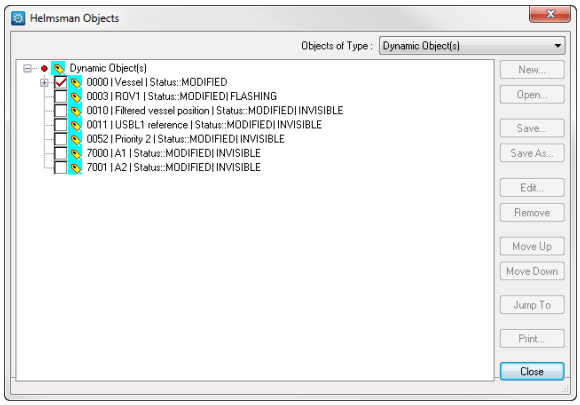


Figure 65 - A list of all current dynamic objects

By double clicking on the various objects, additional menus for adjusting the objects appearance will appear. See **5.3.1.7.3** Settings.

5.3.1.7.3 Settings

The following menu containing seven tabs will appear:

Tab 1: Object ID title

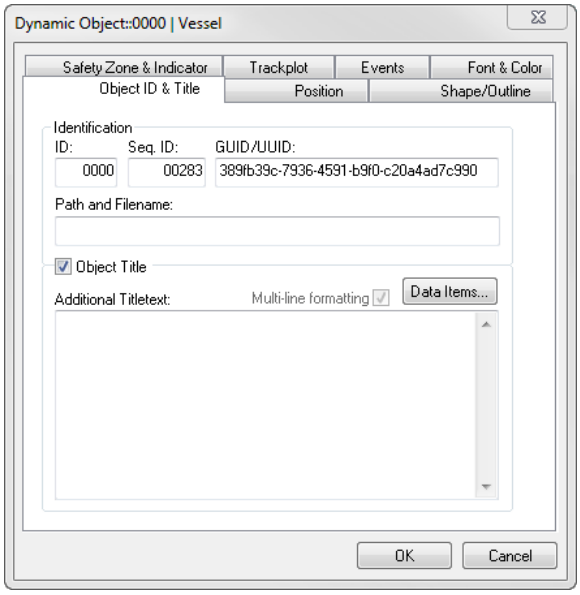


Figure 66 - Dynamic object ID & title tab

Identification / file and path name: This displays the object file name and object identity.

Object title: When enabled, the objects name or title can be displayed next to the object.

Data items: Select which data fields should be displayed next to the object in the Map View at all times.

Additional Titletext: Enter a title or text for this dynamic object.

Tab 2: Position

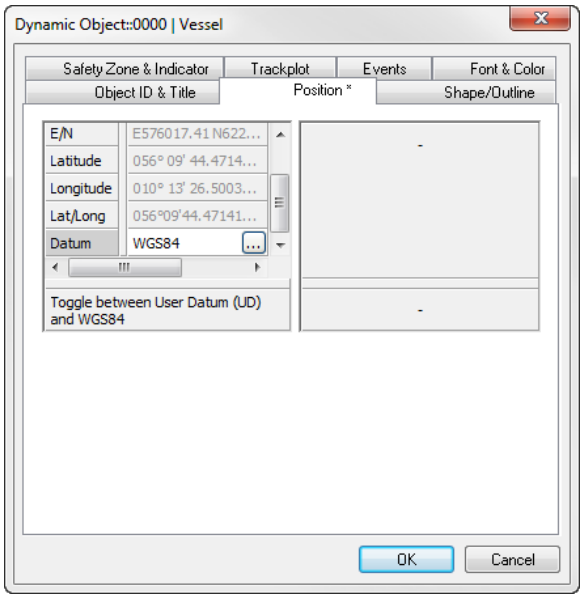


Figure 67 - Dynamic Object Position tab

Datum - The position of the object will be displayed. You can select between WGS84 positions and user datum positions if applicable.

Tab 3: Shape/Outline

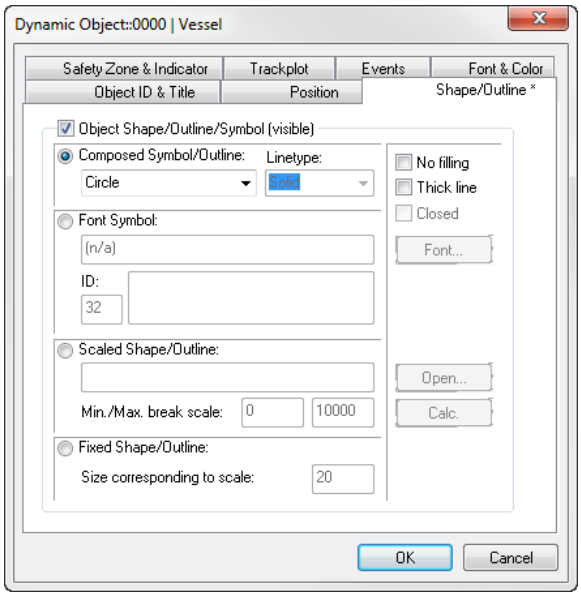


Figure 68 - Dynamic object shape/outline tab

Object shape/outline/symbol (visible): Check box off to hide the object on the Helmsman Map View window (except object 0 (Vessel) which can't be switched off).

Composed symbol/outline: From this list box you can select between various symbols for the object.

Font symbol: Here you can assign a symbol from the Windows registered font library. Click the **<Font>** button to set your font to "INT1 Symbol" or "INT1 Buoys" and set the ID to correspond with the symbol. Note: a manual font registration is required prior to selecting either of these fonts.

Scaled shape/outline: From this list box you can select a user defined shape (.shp) or symbol (.000) file for the object. The Min/Max break scale is the scale where the object will change from the vessel file outline to a fixed object symbol. Clicking **<Calc>**, the program will calculate the best breaking scale.

No filling: If this is enabled, the object will not be filled with any colour, even if a fill colour command is present in the attached *.shp file.

Thick line: The outline of the shape will be bold and more visible.

Tab 4: Safety zone & indicator

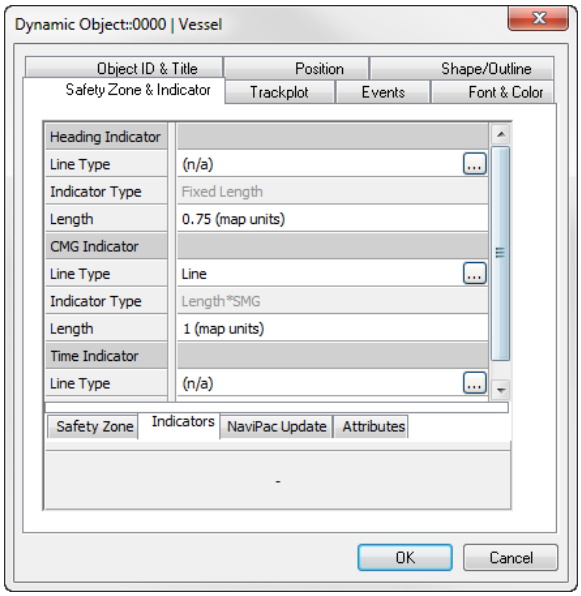


Figure 69 - Dynamic object safety zone & indicator view

In the safety zone tab, you can set a safety zone ring that will follow the movement of your object. The unit marker (UU) stands for User's Units, meaning whatever unit is selected in the NaviPac Config.

The indicators tab allows the user to set forward looking predictive indicators based on object's heading, course made good, or a length of time (can be defined as Line or Arrow).

Tab 5: Trackplot

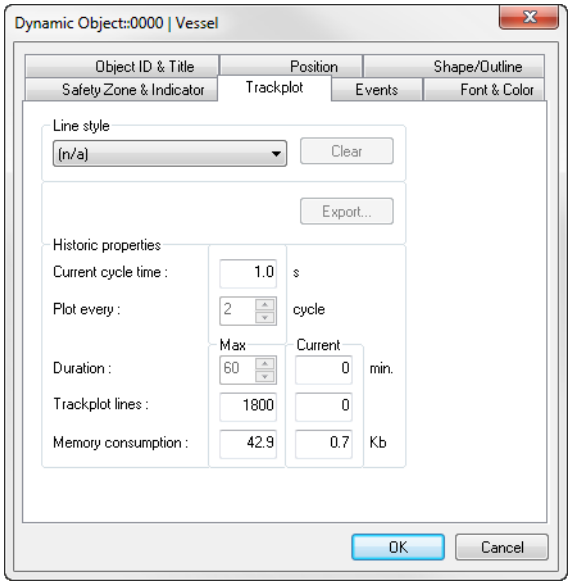
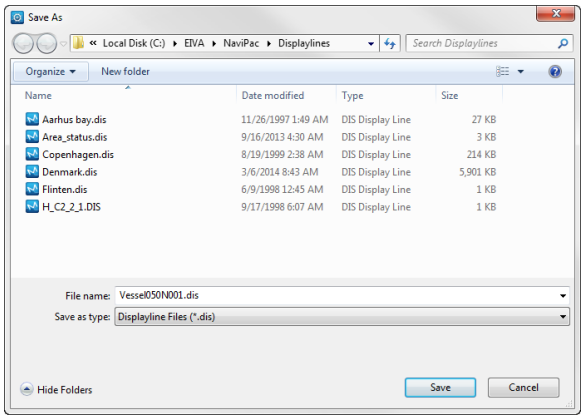


Figure 70 - Dynamic object trackplot view

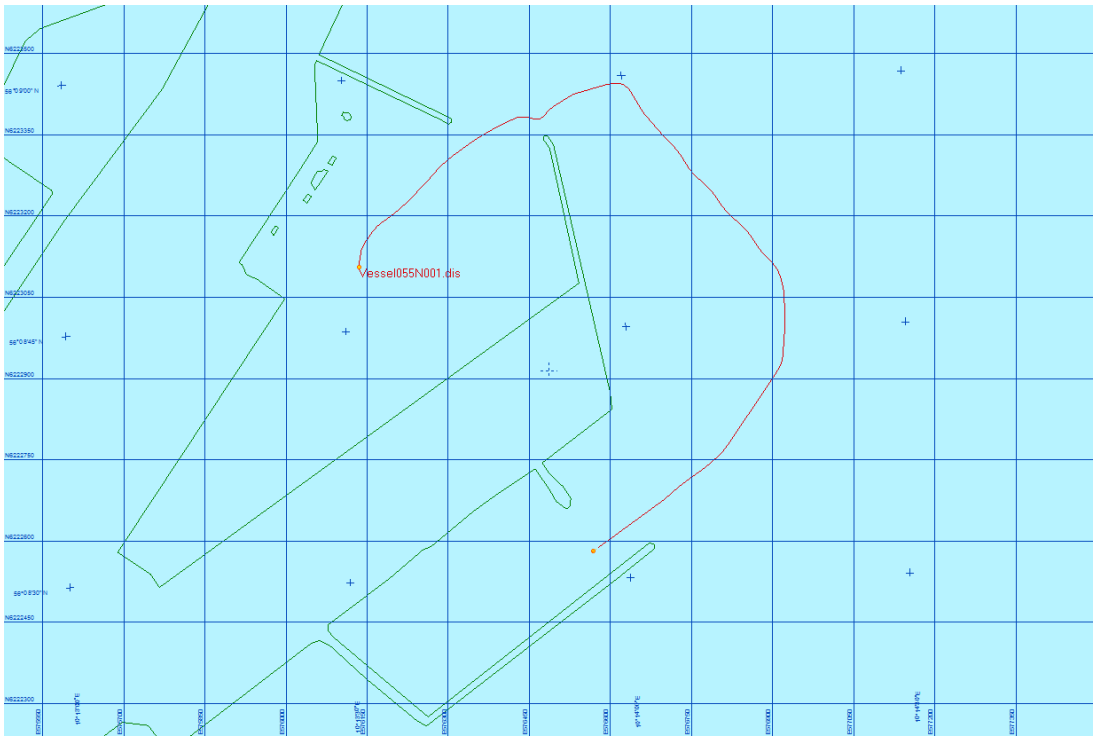
Line style, <Clear>: A track plot can be enabled, by selecting a line style from this list box, the current track plot will be cleared by pressing this button.

Export: By pressing this button, it is possible to export the current track plot as a display line. When the operator wants to store the trackplot on a file, he must press **<Export>** from the above menu. If the vessel has been chosen to create the trackplot, a file, e.g. Vessel055N001.dis, will be saved in the EIVA\NaviPac\Displaylines folder.

The following menu will appear:


Save As
Local Disk (C:) ▸ EIVA ▸ NaviPac ▸ Displaylines
Search Displaylines
Organize
New folder
Name
Date modified
Type
Size
Aarhus bay.dis 11/26/1997 1:49 AM DIS Display Line 27 KB
Area_status.dis 9/16/2013 4:30 AM DIS Display Line 3 KB
Copenhagen.dis 8/19/1999 2:38 AM DIS Display Line 214 KB
Denmark.dis 3/6/2014 8:43 AM DIS Display Line 5,901 KB
Flinten.dis 6/9/1998 12:45 AM DIS Display Line 1 KB
H_C2_2_1.DIS 9/17/1998 6:07 AM DIS Display Line 1 KB
File name: Vessel050N001.dis
Save as type: Displayline Files (*.dis)
Hide Folders
Save
Cancel
Figure 71 -Save as window for trackplot export

The file can be read as a display line giving the following result:



Current cycle time: This is information only and displays the current cycle time. This is to decide how often the track should be updated.

Plot every: From this menu point it is possible to select how often the track should be updated.

Duration: From this menu, it is possible to decide, how long the computer should keep the track in memory.

Trackplot lines: This will show how many lines are stored in the track plot array.

Memory consumption: This will show how much memory is used to store the track plot data.

Tab 6: Events

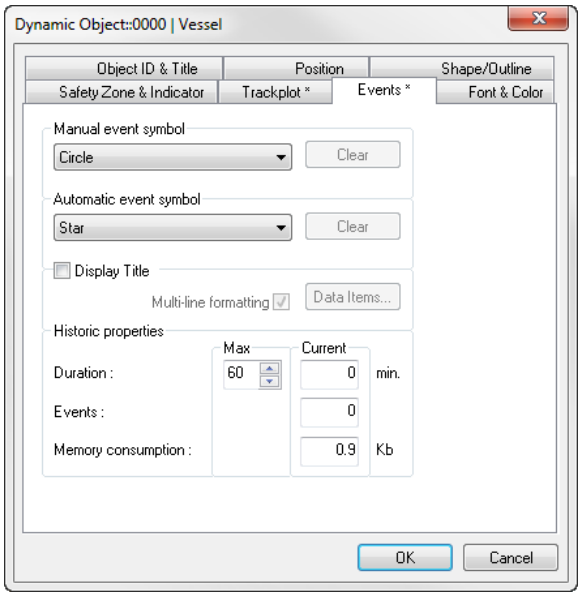


Figure 72 - Dynamic object events tab

Manual event symbol: From this list box, a symbol for manual events can be selected.

Manual event symbol, <Clear>: Pressing this button will clear the manual event symbols.

Automatic event symbol: From this list box, a symbol for automatic events can be selected.

Automatic event symbol, <Clear>: Pressing this button will clear the automatic event symbols.

Display name/title: The event number/ time and additional text (manual event with note and more) can be enabled/disabled. Choose by clicking **<Data Items>** button.

Duration: From this menu point, you can select how many minutes back in time the program should remember the event numbers.

Events: This will show how many events are presently stored in memory.

Memory consumption: This will show the memory consumption for storing the events.

Tab 7: Font and Colour

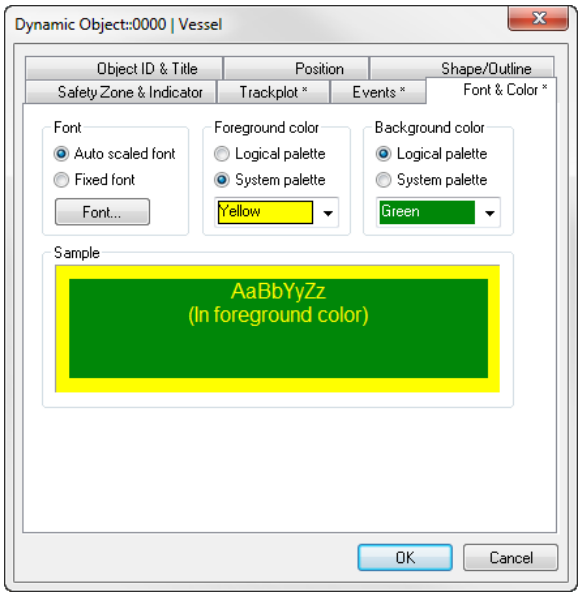


Figure 73 - Dynamic object font & colour tab

Font: Selection between different font types that are available.

Foreground colour/ Background colour: When selecting logical palette, the colours will change when the various palette bar buttons are selected (Day/Dusk/Twilight/Night).

5.3.1.8 Runline

From the following menu items, it is possible to create, select, distribute, clear and adjust

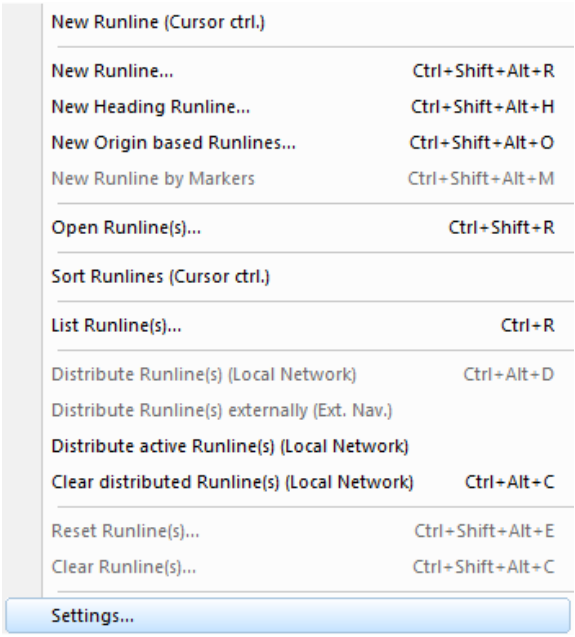


Figure 74 - Runline menu

5.3.1.8.1 New Runline

The following Runline edit menu containing six tabs will appear:

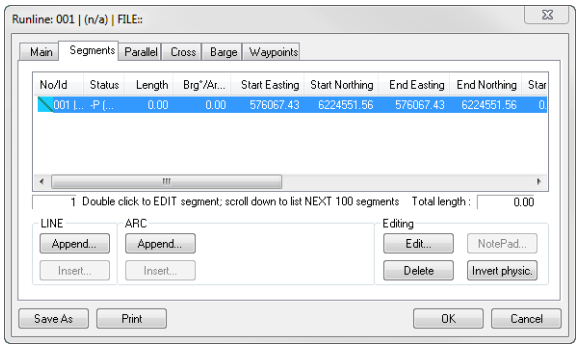


Figure 75 - Runline edit window

Tab1: Main

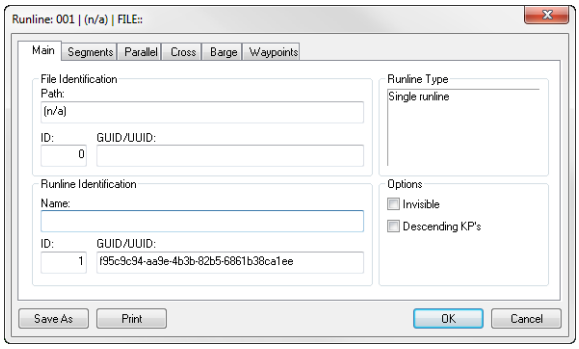


Figure 76 - Runline Main tab

Runline type: This field will show the type of Runline currently selected.

Identification, path and file name: If the current Runline is loaded from a file, this will show the path and file name of the Runline file.

Identification, Runline name: If a file is loaded already, this field will show the file name. If you want to save a newly generated Runline, this is where you input the desired file name.

Options, invisible – The Runline will not be plotted on the Helmsman's Display.

Options, descending KPs – This will invert the KP-calculation, so the line starts with the highest KP-number and counts down to zero.

Tab 2: Segments

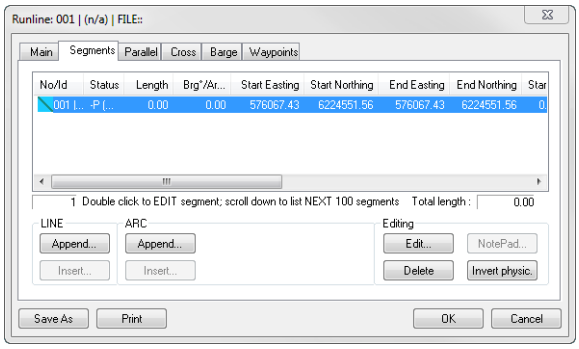


Figure 77 - Runline segments tab

LINE, Append: From the following menu, it is possible to append a segment to the previous segment, by inserting either the end position of the segment or by inputting range and bearing to the end of the segment.

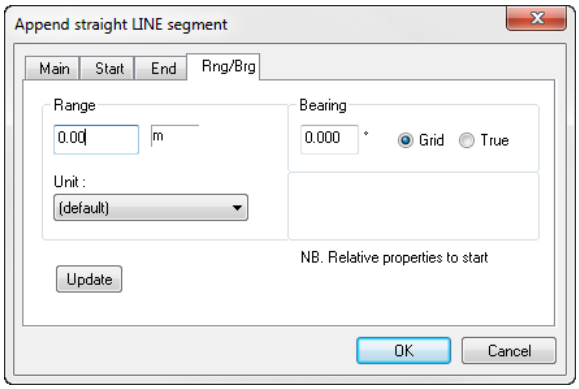


Figure 78 - Append straight line segment

LINE, Insert: From the following menu, it is possible to insert a straight segment between two segments. Grid coordinates cannot be entered into the Start and End tabs from this menu.

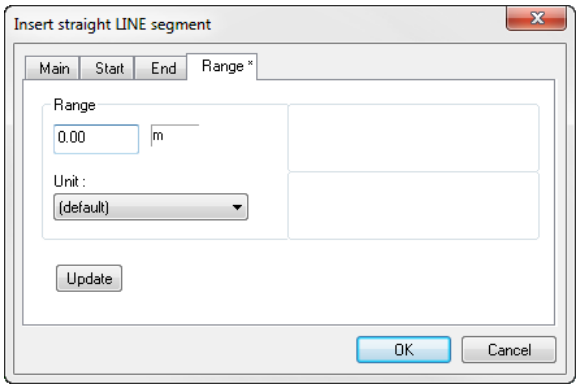


Figure 79 - Insert straight line segment

Append ARC, end: From the following menu it is possible to append a curve to the previous segment by inserting an end position for the curve. The start of the curve will be tangent to the previous segment.

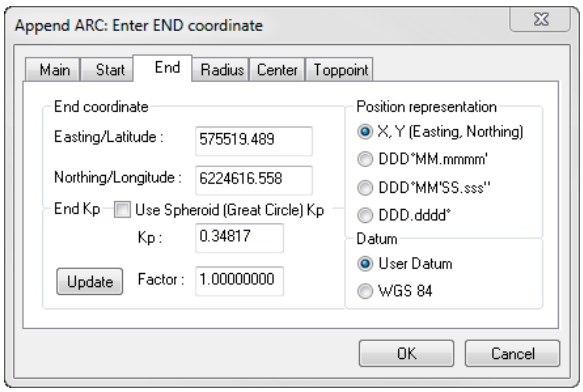


Figure 80 - Append arc segment

Append ARC, radius: Set the radius of the Runline as well as the units (m, ft, km, mile, NM, etc.), click **<Update>** to adjust centre and top point values.

Append ARC, centre: Set the centre of the radius in the window and click **<Update>** to adjust radius and top point values.

Append ARC, top point: Set the top most point of the radius in the window and click **<Update>** to adjust radius and centre values.

Insert ARC, arc…: From the following menu, a curved segment can be inserted between two straight segments. The radius of the curve can be specified. Radius, center, and top point menus work in the same way as in the append window.

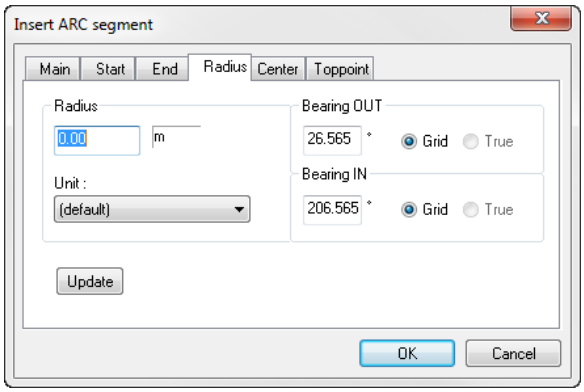


Figure 81 - Insert arc segment

Tab 3: Parallel

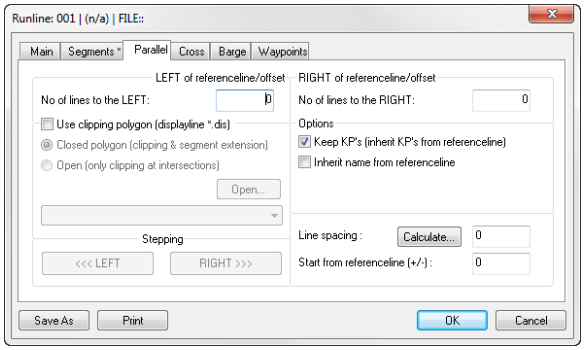


Figure 82 – Runline parallel tab

LEFT / RIGHT of reference, No of lines L/R of reference line: The number of parallel lines left and right of the reference line can be selected.

Use clipping polygon: Enable to select a display line (.dis) as a boundary to trim and extend the planned Runlines.

Options, keep KPs (inherit KPs from reference line): This applies to continuous lines. If this is disabled, parallel lines to the reference line will have a different KP that the reference line, as inner lines/curves are shorter than outer lines/circles. If this is enabled, each parallel segment will have a KP-adjust factor, so the KP value will be the same as for the reference line.

Inherit name from reference line: The name of each line is set relative to its lateral distance from the initial line. Parallel line names will be named as shown with the centre line listed with no name: -20, -10, <noname>, +10, +20

Stepping, LEFT / RIGHT: This will select either the next left or right parallel line when pressing the Survey Bar.

Line spacing: Distance between parallel lines in map units.

Calculate: When using multibeam echosounder, this facility enables the operator to calculate line spacing by inputting the following information: Depth, percent overlap and echo sounder angle.

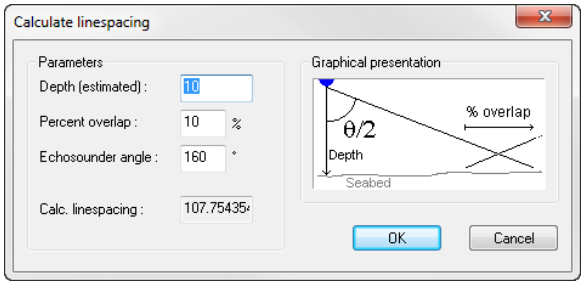


Figure 83 - Automatically calculate line spacing from echosounder depth

When finished click the **<OK>** button at the bottom of the parallel line tab and the lines will be instantly created, they should look something similar to this:

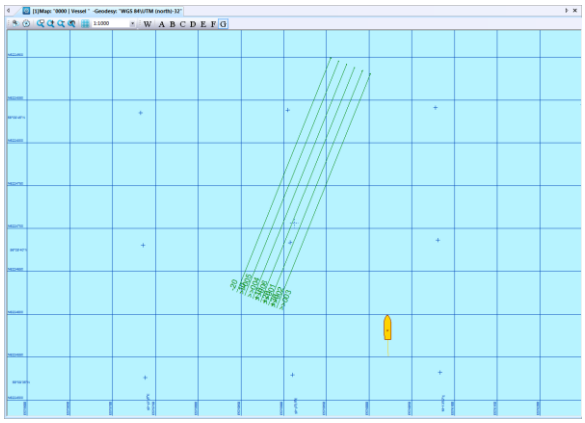


Figure 84 - Example of parallel lines created with line tools

Tab 4: Cross

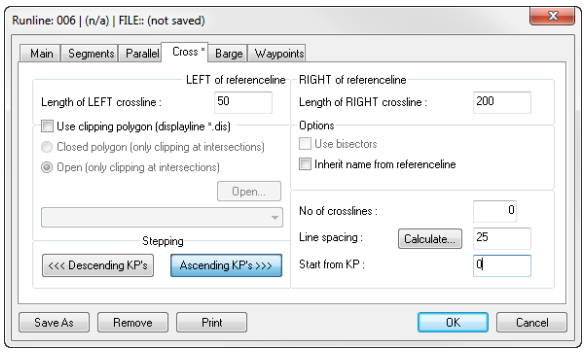


Figure 85 - Runline cross tab

LEFT / RIGHT of reference: From these two fields you can specify the length of the crosslines to the left and right side of the reference line.

Use clipping polygon: Enable to select a display line (.dis) as a boundary to trim and extend the planned Runlines.

Options inherit name from referenceline: The name of each crossline is set relative to its along track position measured in KP distance from the start of the line. Crossline names will be as shown: +0.210KP, +0.230KP, +0.250KP, +0.270KP, etc.

Stepping descending KPs / Ascending KPs: Here you can select which crossline should be the next when pressing the Survey Bar:

No. of crosslines: This will determine how many crosslines to generate.

Line spacing: Here you can specify the spacing between the crosslines.

Start from KP: Here you can specify at which KP. The first crossline should be generated. The result should look similar to this:

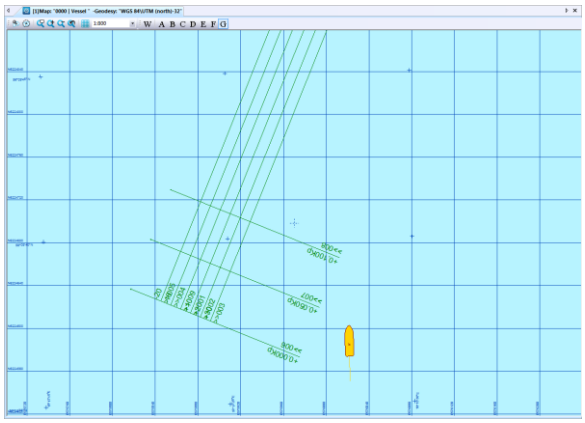


Figure 86 - Example of crosslines created with the line tool.

Tab 5: Barge

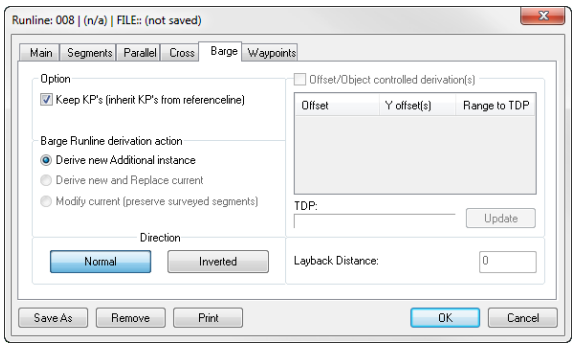


Figure 87 - Runline barge tab

This will create the route a pipe laying barge should follow to lay a pipe or cable on the reference line. As shown below:

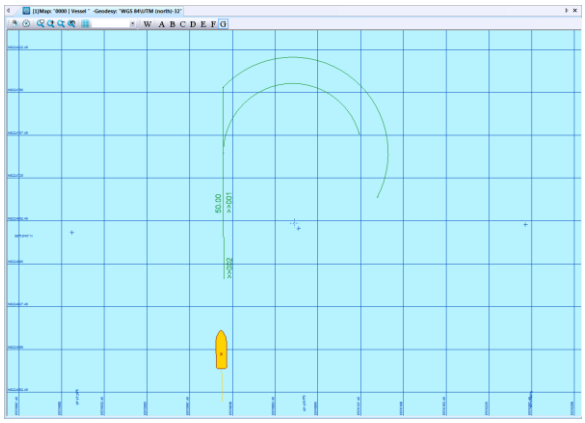


Figure 88 Example of a barge line created with line tools

Keep KPs: Check this box for the new line to inherit KP marks from its reference line. Enter the layback distance to increase the distance between the reference line and the barge line.

Layback distance: This value sets the distance between the vessel track and the inner barge track. For a towed array like a barge or sidescan, you will enter the horizontal distance that the item tows behind the vessel along the Y axis. This is a value, not an offset so the distance behind the vessel will be a positive number. For a pipeline or cable laying operation, enter the horizontal distance from the laying vessel to the touchdown point on the sea floor.

Tab 6: Waypoints

This will divide a curved Runline into a number of waypoints. This is for output to Kongsberg DP system only.

5.3.1.8.2 New Runline (cursor created)

Cursor created Runlines are very useful if you have some kind of background information on the Map View, like C-map. Let us assume that you have to enter the centreline for a route survey.

After you have selected new Runline (Cursor created) the cursor will turn into a cross. Move the cross to the position where the line should start and double click. You can now move the cross to the next turning point and single click. Every time you single click you will create an endpoint of a segment. An info box will be displayed next to the cursor with information about the line segment you are creating. To end the line you must double click.

While entering a cursor created Runline you can press the **<+>** and **<->** buttons to scale up and down, and you can scroll the centre wheel to change level on the C-Map.

If you move outside the map, the map will follow the cursor. This should be done very carefully, otherwise the cross icon will relocate to the centre of the map. Doing this multiple

times in a row will move the map and you may get “lost.” To return, remember that you can click **<Autocentre>** to begin tracking your vessel again.

If you want to delete segments, you can press **<DELETE>** and the last segment will be deleted. The **<ESC>** key cancels the line creation.

If you press the <**Space bar>** when creating a segment following a straight segment, the current segment will toggle between a straight line and a curve.

If you press the <**Space bar>** when creating a segment following a curved segment, the line will toggle between the following: a straight tangent line, a straight line in any direction, and a curve. The curve bends in the direction of the mouse pointer, crossing the pointer back across the bearing of the previous segment, will return the curved segment to a straight line. **<Spacebar>** will toggle it back into a curve if desired.

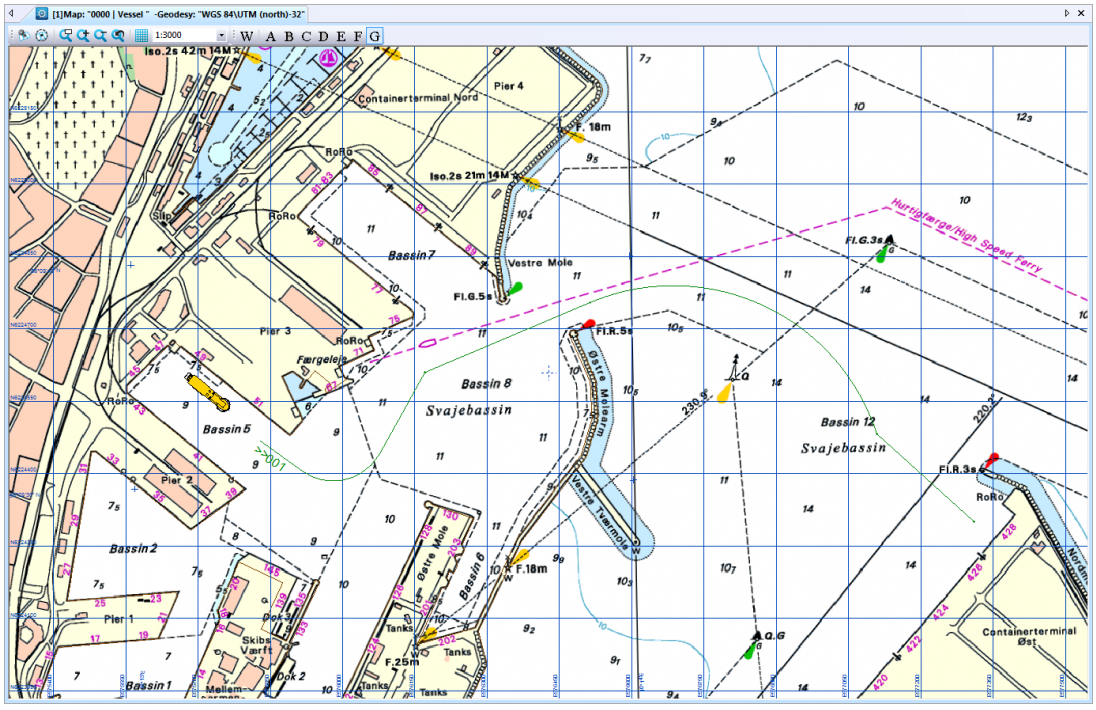


Figure 89 - A multi-segment Runline (green) with straight and curved sections drawn with the mouse cursor

To finish the line you must double click, and the following menu will appear:

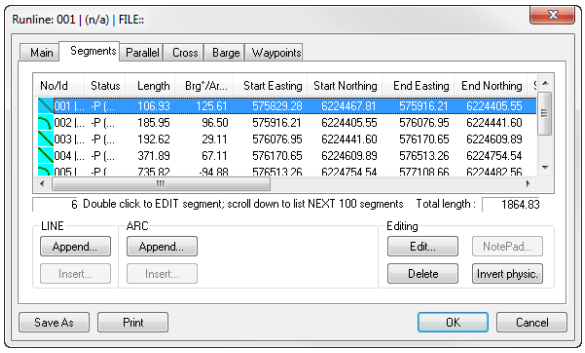


Figure 90 - Runline edit window

Press **<OK>** to accept the line, and save the coordinated in memory. To store the line on file, you must select the Main tab, and insert a file name for the Runline.

5.3.1.8.3 Open Runline

The following menu will appear:

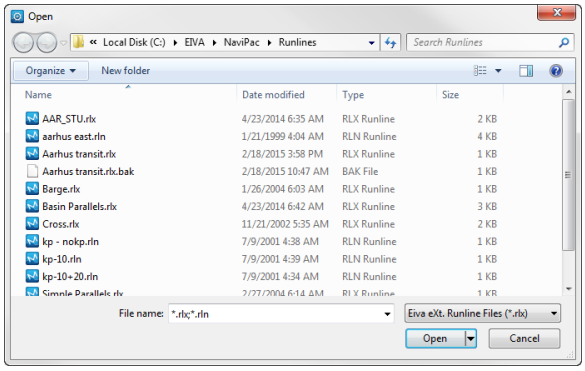

Open
Local Disk (C:) ▸ EIVA ▸ NaviPac ▸ Runlines
Search Runlines
Organize
New folder
Name
Date modified
Type
Size
AAR_STU.rlx 4/23/2014 6:35 AM RLX Runline 2 KB
aarhus east.rln 1/21/1999 4:04 AM RLN Runline 4 KB
Aarhus transit.rlx 2/18/2015 3:58 PM RLX Runline 1 KB
Aarhus transit.rlx.bak 2/18/2015 10:47 AM BAK File 1 KB
Barge.rlx 1/26/2004 6:03 AM RLX Runline 1 KB
Basin Parallels.rlx 4/23/2014 6:42 AM RLX Runline 3 KB
Cross.rlx 11/21/2002 5:35 AM RLX Runline 2 KB
kp - nokp.rln 7/9/2001 4:38 AM RLN Runline 1 KB
kp-10.rln 7/9/2001 4:39 AM RLN Runline 1 KB
kp-10+20.rln 7/9/2001 4:34 AM RLN Runline 1 KB
File name: *.rlx;*.rln
Eiva eXt. Runline Files (*.rlx)
Open
Cancel

Figure 91 - Open Runline window

Select the Runline you want to use and press **<Open>.**

5.3.1.8.4 List Runline(s)

A window displaying the Runlines currently available will appear. From this window, you can create new Runlines by pressing <**New**>, or you can select Runlines from file by pressing <**Open**>. If you highlight a Runline in the window below, you can remove the line from memory by pressing <**Remove**>.

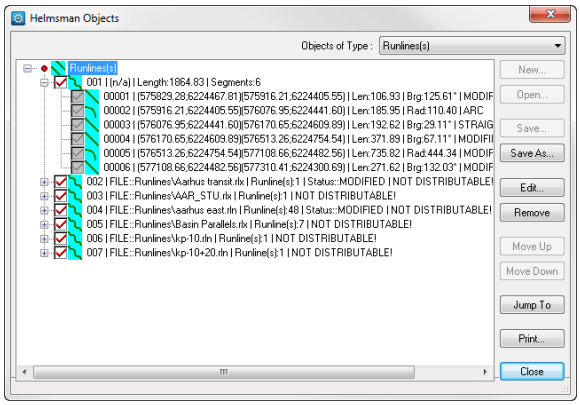


Figure 92 - All Runlines loaded into Helmsman's Display

Double clicking on a line in this menu opens the segment menu for that Runline. To keep Runlines loaded but hide them from view, toggle the red checkbox. To see a Runline's segments, click on the **<+>** symbol to the left of the check box to expand the menu.

5.3.1.8.5 Distribute Runline(s) (Local Network)

All loaded runline(s) will be distributed to all Slave Helmsman's Displays. They will read the Runline data from the runline file.

5.3.1.8.6 Distribute Runline(s) externally (Ext. Nav.)

If a runline is active, the selected runline is saved and the active runline will be distributed to all TUG boats. They will read the Runline data from the transferred runline file.

5.3.1.8.7 Distribute active Runline(s) (Local Network)

If a runline is active, e.g. selected or logging, the active runline(s) will be distributed to all Slave Helmsman's Displays. This might be necessary if slave loses active runline.

5.3.1.8.8 Clear distributed Runline(s) (Local Network)

All loaded runline(s) on all Slave Helmsman's Displays will be cleared from memory.

5.3.1.8.9 Reset Runline(s)

The status of the Runline (not surveyed, partially surveyed, complete), will be reset to not surveyed. This affects all loaded Runlines whether they are visible or not.

5.3.1.8.10 Clear Runline(s)

All Runlines will be removed from memory.

5.3.1.8.11 Settings…

A menu, containing two tabs will appear.

Tab 1: Options

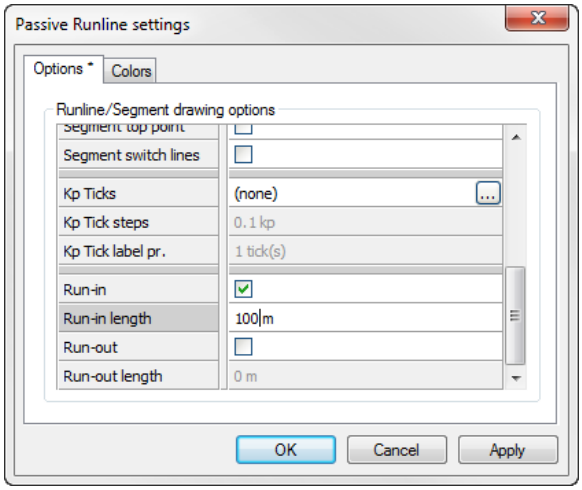


Figure 93 - Passive Runline settings

Invisible Runline: All Runlines: reference, parallel and crosslines will be invisible with the exception of active Runline segment.

Runline name: Display the name next to the start of the Runline.

Runline ID: Display the Runline ID next to the start of the Runline. This ID starts with “>>”.

Segment name: Display the segment name at the start of each segment.

Thick reference line: The reference line will be drawn with a thick pen, all other line will be drawn with the normal pen.

Thick runline: All Runlines line will be drawn with a thick pen.

DCC/KP Connection line: Adds a line from the mouse cursor to the nearest Runline with the KP and Distance Cross Course information annotated next to it. The line will automatically snap to the nearest Runline and measurements can be extended beyond the

end of the Runline. Measurements before the start of the runilne will have negative KP measurements.

Segment direction: The end of a segment will have a bullet. Also if name or ID is displayed, they will be located at the start of the line.

Segment centre: The centre of the curve will be displayed with a line to the start point and end point of the curve.

Segment top point: The top point of the curve will be displayed with a line to the start point and end point of the curve.

Tab 2: Colours

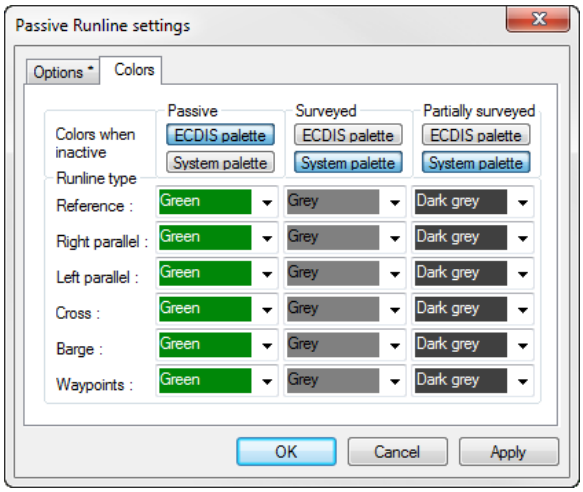


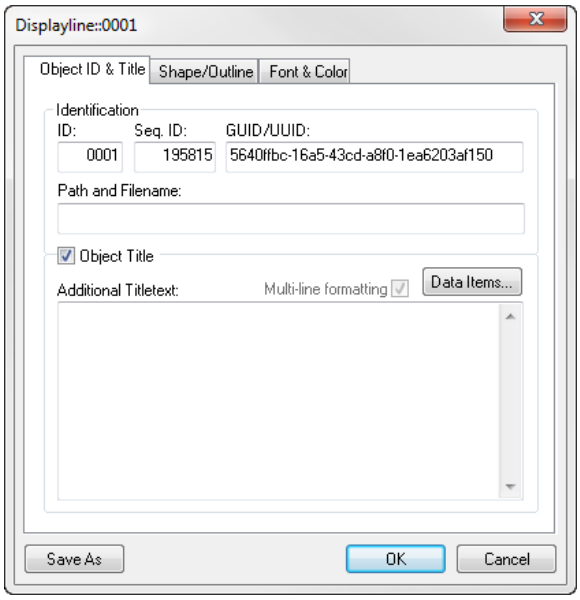
Figure 94 - Runline colour settings

The default colours for the various types of survey lines can be selected from this menu. Each line type has three possible status colours: passive, surveyed, and partially surveyed.

5.3.1.9 Displayline

A display line is used to draw background information on the Map View. This information could be coastlines, harbours, pipelines, cables, etc. The file can be either an ACSII file or a DXF file. Please see: **7.2 The Displayline** format**.** The settings option on the menu may be greyed out but you may double click it on the Map View window to see the display line's settings. When doing so, or whenever creating a display line with a cursor, an edit window with three tabs will appear:

Tab 1: Object ID & title



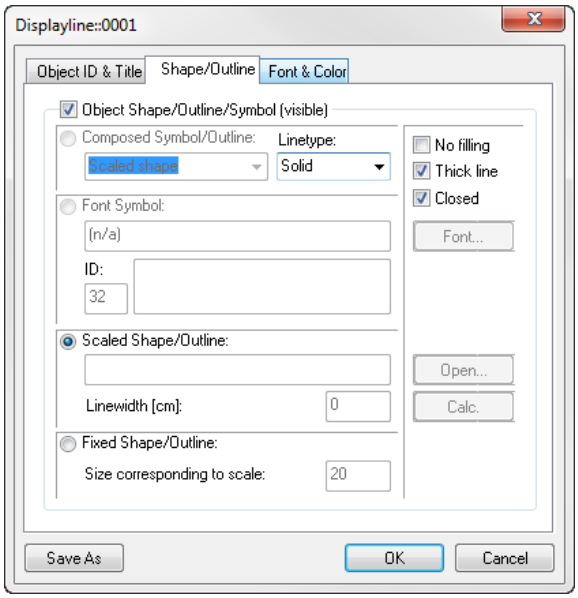
Identification / file and path name: This displays the object file name and object identity if you loaded it into Helmsman's Display. If you created it inside Helmsman's Display, this field will be blank. Click the **<Save As>** button to save the object.

Object title: When enabled, the object's name or title can be displayed next to the object.

Data items: Select which data fields should be displayed next to the object in the Map View at all times.

Additional Titletext: Enter a title or text for this dynamic object.

Tab 2: Shape/Outline



Object shape/outline/symbol (visible): Check box off to hide the object on the Helmsman Map View window.

Composed symbol/outline: Not applicable in this context.

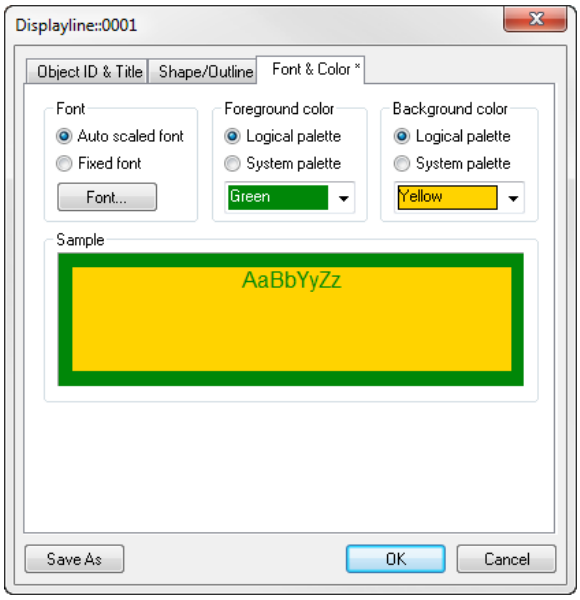
Font symbol: Not applicable in this context.

Scaled shape/outline: Displaylines are scaled by nature.

No filling: If this is enabled, the object will not be filled with any colour, even if a fill colour command is present in the *.dis file.

Thick line: The outline of the polygon/polyline will be bold and more visible.

Tab 3: Colours



Font: Selection between different font types that is available.

Foreground colour/ background colour: When selecting Logical palette, the colours will change when the various palette bar buttons are selected (day/dusk/twilight/night).

5.3.1.9.1 New displayline (cursor created)

Cursor created displaylines are also very useful, and the tools are similar to the Runline creation tools with the exception that displaylines are only comprised of straight lines. No arcs are available in the creation tool.

After you have selected new displayline (cursor created) the cursor will turn into a cross. Move the cross to the position where the line should start and double click. You can now move the cross to the next turning point and single click. Every time you single click you will create an endpoint of a segment. You will see the range and bearing information notated below the line segment you are creating. The **<ESC>** key cancels the line creation. To end the line you must double click.

While entering a cursor created Runline you can press the **<+>** and **<->** button to scale up and down, and you can scroll the centre wheel to change level on the map.

If you move outside the map, the map will follow the cursor. This should be done very carefully. Doing this multiple times in a row will move the map and you may get “lost.” To return, remember that you can click **<Autocentre>** to begin tracking your vessel again.

5.3.1.9.2 New displayline polygon (cursor created)

Follow the steps for creating a new displayline, but at the end when double clicking to end the line, a final line will be drawn to the start point to complete the polygon and it will be filled with a solid colour.

5.3.1.9.3 Open displayline(s)

The following menu will appear:

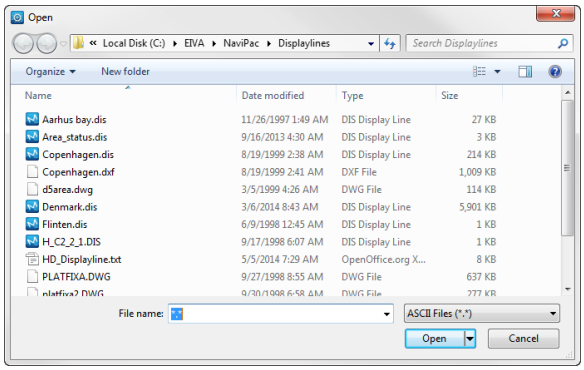

Open
Local Disk (C:) ▸ EIVA ▸ NaviPac ▸ Displaylines
Search Displaylines
Organize
New folder
Name
Date modified
Type
Size
Aarhus bay.dis 11/26/1997 1:49 AM DIS Display Line 27 KB
Area_status.dis 9/16/2013 4:30 AM DIS Display Line 3 KB
Copenhagen.dis 8/19/1999 2:38 AM DIS Display Line 214 KB
Copenhagen.dxf 8/19/1999 2:41 AM DXF File 1,009 KB
d5area.dwg 3/5/1999 4:26 AM DWG File 114 KB
Denmark.dis 3/6/2014 8:43 AM DIS Display Line 5,901 KB
Flinten.dis 6/9/1998 12:45 AM DIS Display Line 1 KB
H_C2_2_1.DIS 9/17/1998 6:07 AM DIS Display Line 1 KB
HD_Displayline.txt 5/5/2014 7:29 AM OpenOffice.org X... 8 KB
PLATFIXA.DWG 9/27/1998 8:55 AM DWG File 637 KB
File name:
ASCII Files (*.*)
Open
Cancel

Figure 95 - Open displaylines window

The window shows display line files in the default display line directory: C:\EIVA\Navipac\DisplayLines.

Select the file to display, and press **<Open>.**

5.3.1.9.4 List displayline(s)

A window displaying the displaylines currently available will appear. From this window, you can select display lines from file by pressing <**Open**>. If you highlight a display line in the window below, you can highlight and remove the line from memory by pressing <**Remove**>.

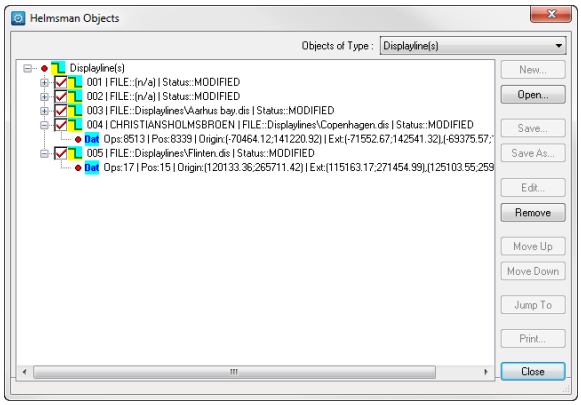


Figure 96 - A list of displaylines loaded into Helmsman's Display

5.3.1.9.5 Clear displayline(s)

All displaylines loaded into Helmsman's Display will be removed from memory.

5.3.1.9.6 Distribute displayline(s) (Local Network)

All displaylines will be distributed to all Slave Helmsman's Displays/remote computers on the local network. They will read the displayline data from the file.

5.3.1.9.7 Clear distributed displayline(s) (Local Network)

Clears all distributed displaylines from all Slave Helmsman's Displays/remote computers on the local network.

5.3.1.10 Waypoint

In NaviPac, a waypoint is a grid coordinate with a name. This coordinate could be the coordinate of an anchor, tide gauge, buoy, well, fixed construction, etc. There are facilities in the helmsman's program to display a range and a bearing from any object to any waypoint.
See**: 5.3.7 Range & Bearing**

5.3.1.10.1 New waypoint

A menu containing six tabs will appear:

Tab 1: Object data

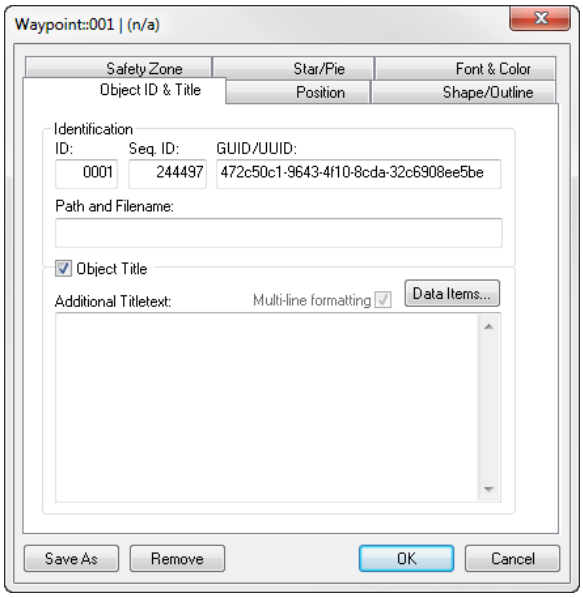


Figure 97 - Waypoint object ID & title tab

Identification / file and path name: This displays the object file name and object identity if you loaded it into Helmsman's Display. If you created it inside Helmsman's Display, this field will be blank. Click the **<Save As>** button to save the object.

Object Title: When enabled, the objects name or title can be displayed next to the object.

Data items: Select which data fields should be displayed next to the object in the Map View at all times.

Additional Titletext: Enter a title or text for this dynamic object

Tab 2: Position

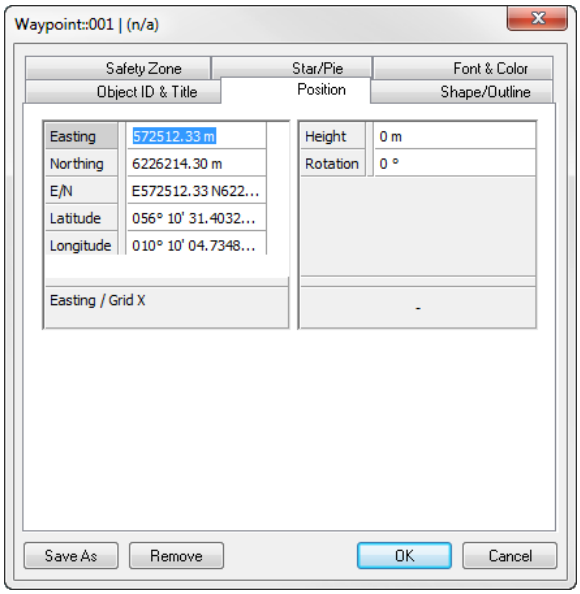


Figure 98 - Waypoint position tab

Coordinates: The position of the waypoint can be entered in grid coordinates or latitude and longitude. The datum box can be toggled between WGS84 and User datum. This means, that if you only have the position in WGS84, you can enable the WGS84 button, input the coordinates, and activate the user button. The coordinates will be converted to User datum.

Height: The elevation of the waypoint can be inserted here. This is optional.

Rotation: The heading representation of the waypoint symbol can be set here.

Tab 3: Shape/Outline

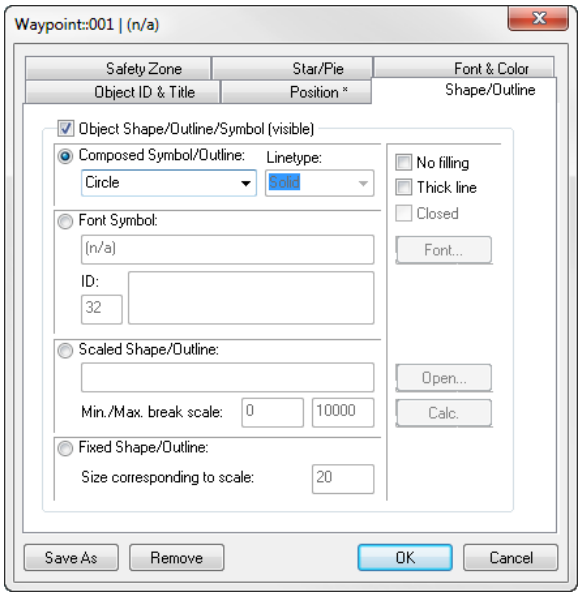


Figure 99 - Waypoint shape/outline tab

Object shape/outline/symbol (visible): Check box off to hide the object on the Helmsman Map View window.

Composed symbol/outline: From this list box you can select between various symbols for the object.

Font symbol: Here you can assign a symbol from the Windows registered font library. Click the **<Font>** button to set your font to “INT1 Symbol” or “INT1 Buoys” and set the ID to correspond with the symbol. Note: a manual font registration is required prior to selecting either of these fonts.

Scaled shape/outline: From this list box you can select a user defined shape (.shp) or symbol (.000) file for the object. The min/max break scale is the scale where the object will change from the vessel file outline to a fixed object symbol. The program will calculate the best breaking scale by clicking **<Calc>.**

No filling: If this is enabled, the object will not be filled with any colour, even if a fill colour command is present in the attached *.shp file.

Thick line: The outline of the shape will be bold and more visible.

Tab 4 Safety zone

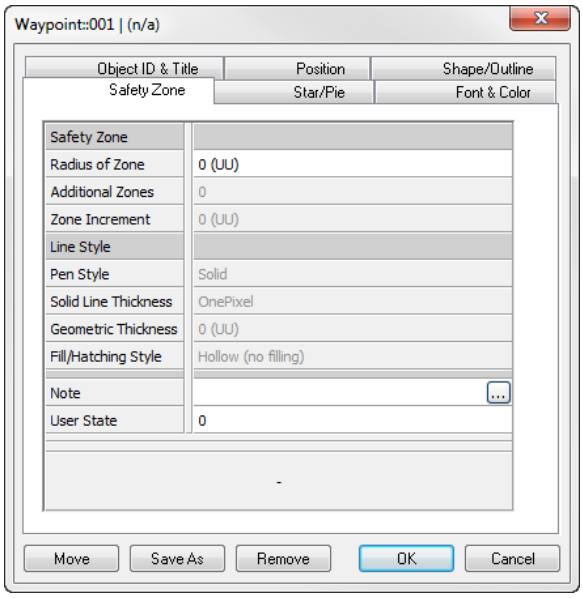


Figure 100 - Waypoint safety zone tab

Radius of Zone: Radius in UU, fx [m] or [ft].

Additional Zones: No. of additional zones.

Zone Increment: Radius-increment of additional zone(s) in UU, fx [m] or [ft].

Line Style: pen style (solid or dotted), line thickness/geometric thickness (UU) and fill/hatching style (solid or hatched).

Note: A general note.

User State: An arbitrary user state number (integer).

Tab 5 Star/Pie

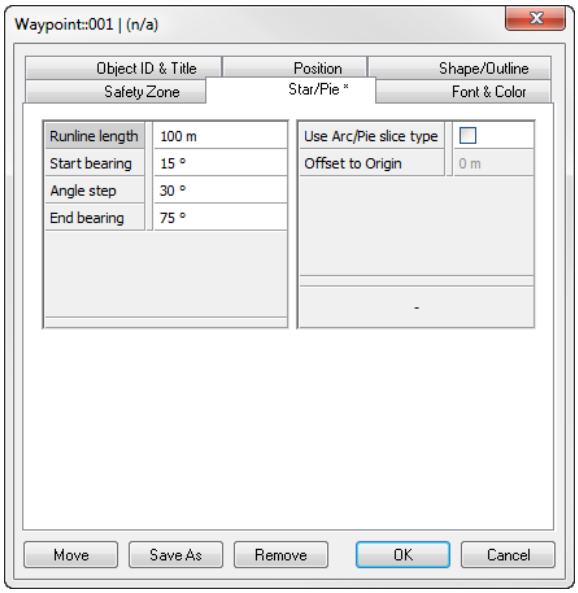


Figure 101 - Waypoint star/pie tab

Star pattern: The settings listed in 'Figure 101' above will create a line plan that looks like 'Figure 102' below. The Runlines are 100 meters in total length, 50m on each side of the waypoint and begin at bearings of 15 (195), 45 (225) and 75 (255) degrees.

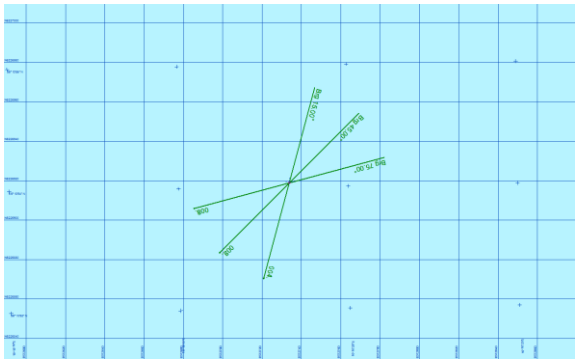


Figure 102 - Map View of Runlines created from the waypoint star function

Runline length: The length of the Runline with the origin at the middle (aka diameter).

Start bearing: The bearing of the first Runline, starting from 0 degrees clockwise. If you are not using Arc/Pie slice type, you will not need to enter more than 180 into either the start or end bearing.

Angle step: From the first Runline, how far between Runlines (in degrees)

End bearing: The bearing of the last Runline. If you are not using Arc/Pie slice type, you will not need to enter more than 180 into either the start or end bearing.

Use Arc/Pie slice type: Checking this box will create Runlines with the origin at the start of the Runline (aka radius).

Pie pattern: The settings listed in 'Figure 101' above, but **with the Arc/Pie slice type checked**, will create a line plan that looks like 'Figure 103' below, the Runlines are 100 meters in total length from the waypoint and have bearings of 15, 45 and 75 degrees.

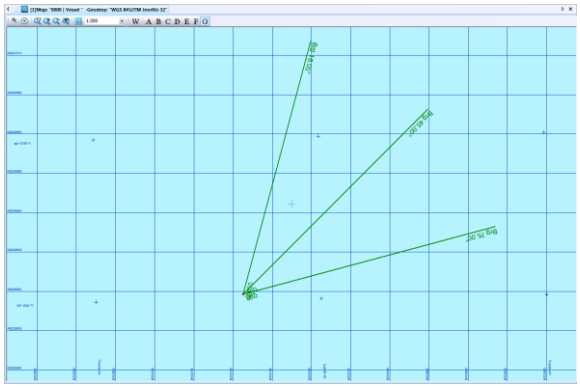
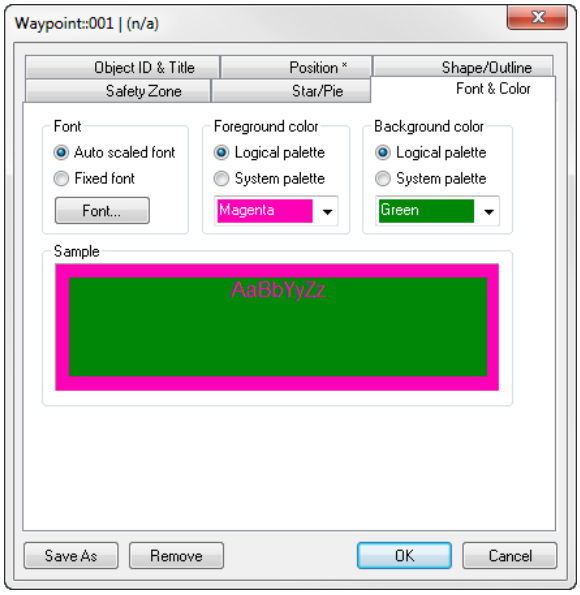


Figure 103 – Map View of Runlines created with the waypoint pie function

Tab 6 Font and colour

Font, foreground colour, and background colour are options to change the appearance of waypoints and their symbols.



Font: Selection between different font types that are available.

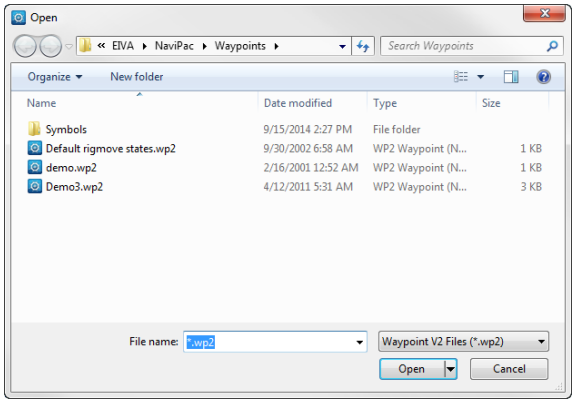
Foreground colour/ background colour: When selecting logical palette, the colours will change when the various palette bar buttons are selected (day/dusk/twilight/night).

Move button: Once a waypoint has been created, when you view the settings the **<Move>** button will be available. Click to set the new position of the waypoint on your Map View window.

Remove: Once a waypoint has been created, the **<Remove>** button will be available. Click it to remove the waypoint from memory.

5.3.1.10.2 Open waypoint(s)

The following menu will appear:

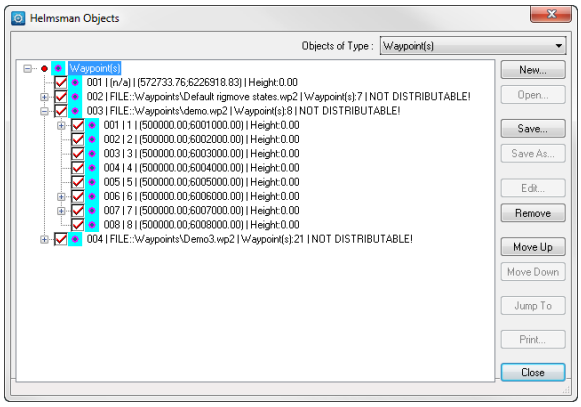


The window shows waypoint files in the default waypoint directory: C:\EIVA\NaviPac\Waypoints.

Select a waypoint file and press **<Open>.**

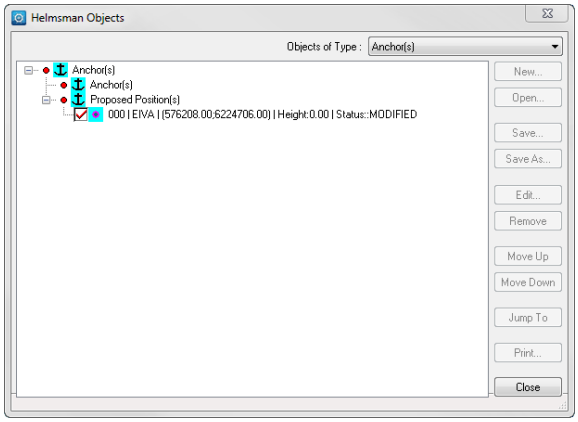
5.3.1.10.3 List waypoint(s)

A window displaying the waypoints currently available will appear. From this window, you can create new waypoints by pressing <**New**>, or you can select waypoints from file by pressing <**Open**>. If you highlight a waypoint in the window below, you can remove waypoint from memory by pressing <**Remove**>. Double click on a waypoint or edit the settings. To keep a waypoint or waypoint file loaded into memory but hidden from view in the Map View window, uncheck the box next to the name. To see the waypoints loaded into a file, or to see safety zone options on a waypoint, click the **<+>** next to the checkbox to expand the menu.


Helmsman Objects
Objects of Type : Waypoint(s)
Waypoint(s)
001 | (n/a) | (572733.76;6226918.83) | Height:0.00
002 | FILE::\Waypoints\Default rigmove states.wp2 | Waypoint(s):7 | NOT DISTRIBUTABLE!
003 | FILE::\Waypoints\demo.wp2 | Waypoint(s):8 | NOT DISTRIBUTABLE!
001 | 1 | (500000.00;6001000.00) | Height:0.00
002 | 2 | (500000.00;6002000.00) | Height:0.00
003 | 3 | (500000.00;6003000.00) | Height:0.00
004 | 4 | (500000.00;6004000.00) | Height:0.00
005 | 5 | (500000.00;6005000.00) | Height:0.00
006 | 6 | (500000.00;6006000.00) | Height:0.00
007 | 7 | (500000.00;6007000.00) | Height:0.00
008 | 8 | (500000.00;6008000.00) | Height:0.00
004 | FILE::\Waypoints\Demo3.wp2 | Waypoint(s):21 | NOT DISTRIBUTABLE!
New...
Open...
Save...
Save As...
Edit...
Remove
Move Up
Move Down
Jump To
Print...
Close

5.3.1.10.4 List anchors

The list anchors option is only available if NaviPac is setup in TMS mode. In normal mode this option is greyed out. If available and selected, a window displaying the anchors currently available will appear. From this window, you can create new proposed positions by pressing <**New**>, or you can select positions from file by pressing <**Open**>. If you highlight a waypoint in the window below, you can remove waypoint from memory by pressing <**Remove**>. Double click on a waypoint or edit the settings. To keep an anchor or proposed position loaded into memory but hidden from view in the Map View window, uncheck the box next to the name. To see the positions loaded into a file, click the **<+>** next to the checkbox to expand the menu.



5.3.1.10.5 Clear waypoint(s)

All waypoint data will be removed from memory.

5.3.1.10.6 Distribute waypoint(s) (Local Network)

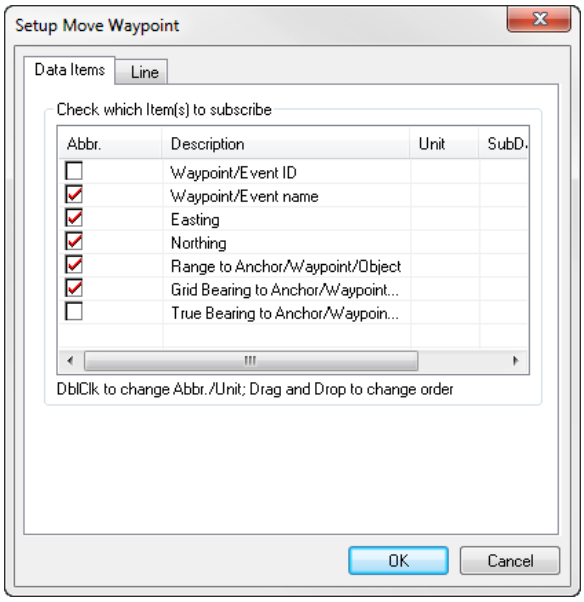
All waypoints will be distributed to all Slave Helmsman's Displays/remote computers on the local network. They will read the waypoint data from the file.

5.3.1.10.7 Clear distributed waypoint(s) (Local Network)

Clears all distributed waypoint files from Slave Helmsman's Displays/remote computers on the local network.

5.3.1.10.8 Waypoint settings

Selecting this option will open the setup move waypoint window with two tabs:



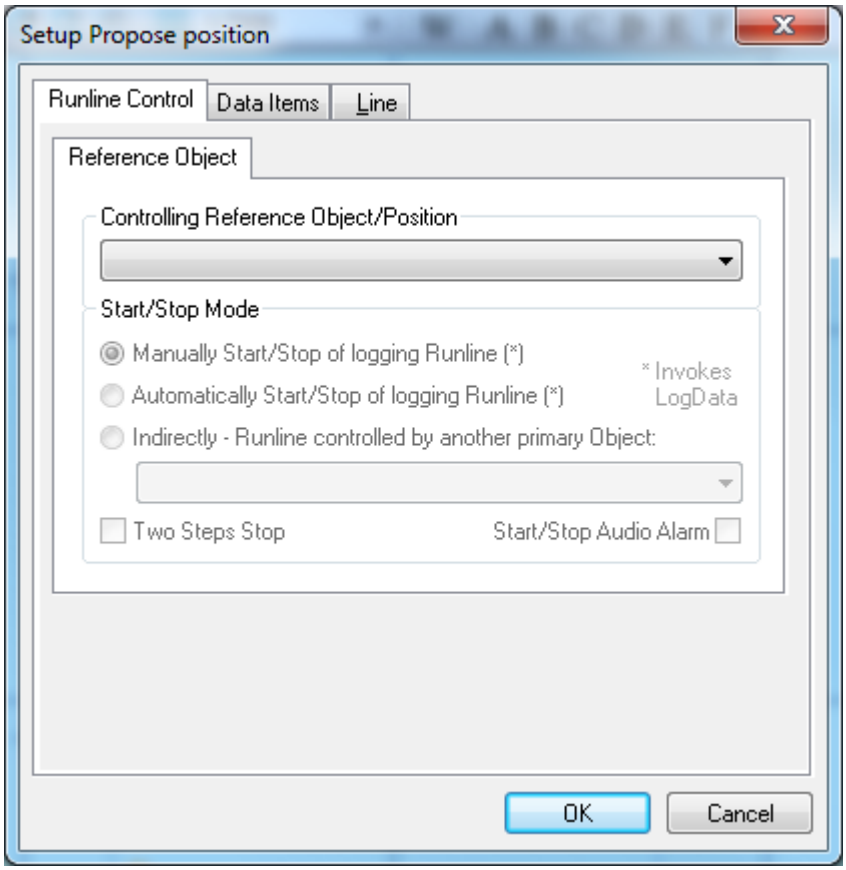
Data items: When moving a waypoint, this data will be shown to assist in the new placement.

Line: Select whether or not to have a line from original waypoint location to the mouse cursor when moving a waypoint. You can also toggle annotation of range and bearing as well as pen style.

5.3.1.10.9 Anchor settings

The anchor settings are greyed out unless NaviPac Config is setup in TMS mode. If available and selected, a menu containing three tabs will appear. This is the setup purpose position window.

Tab 1: Runline Control



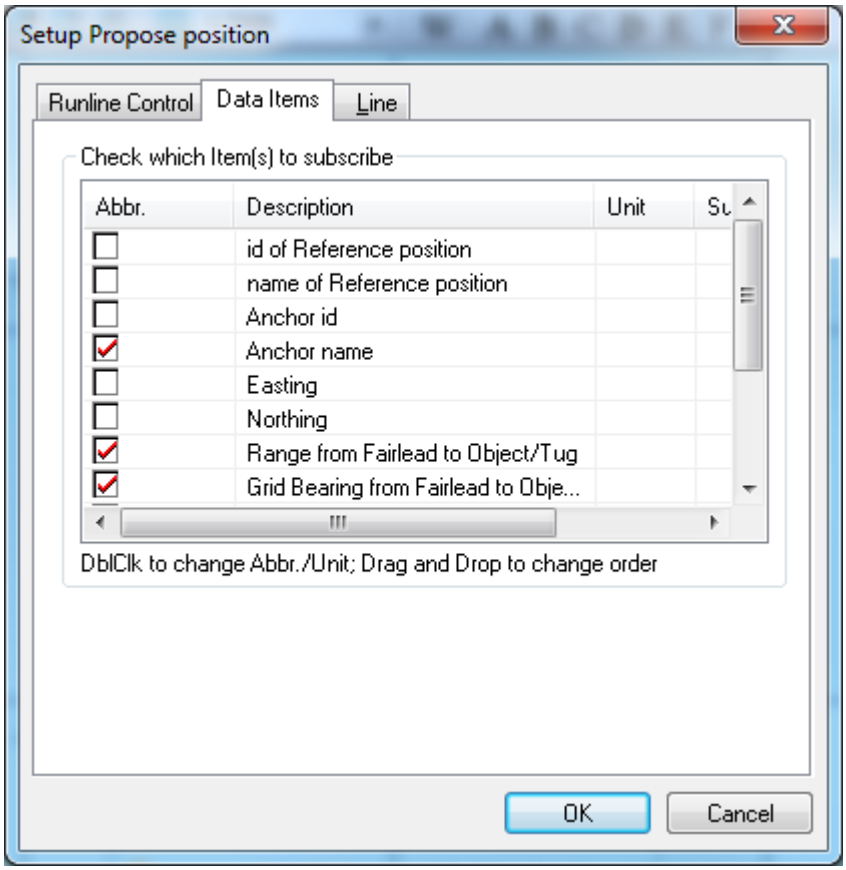
Reference object: Set the dynamic object you wish to be the controlling reference object, i.e. which position to project onto the active runline.

Start/Stop mode: Not applicable in this context.

Two steps stop: Not applicable in this context.

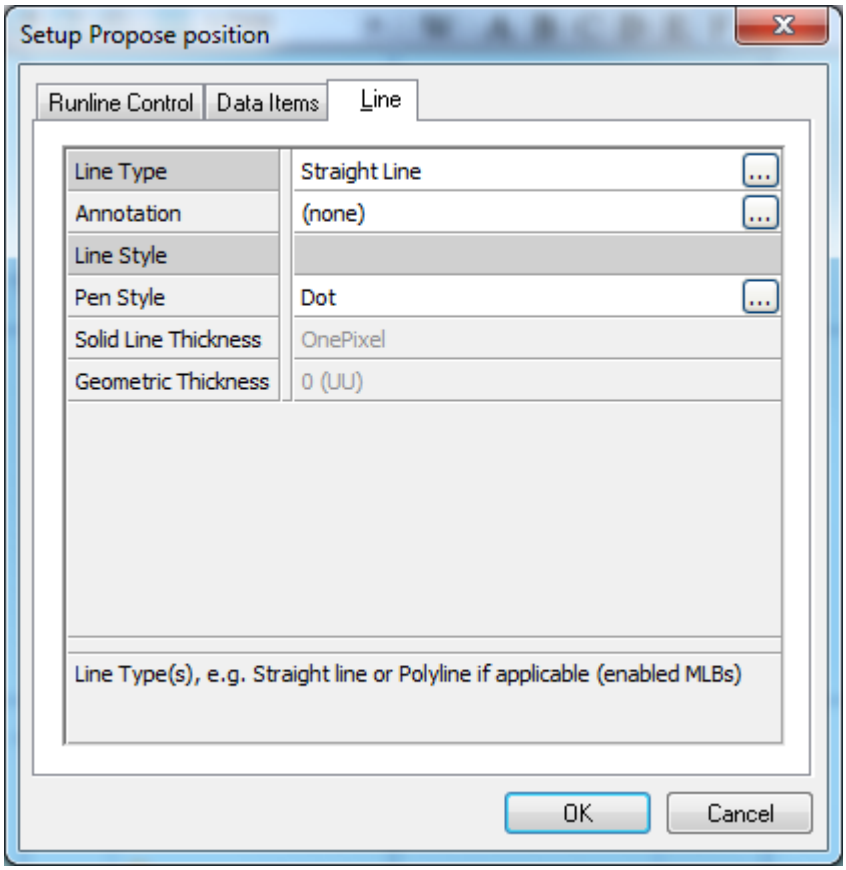
Start/Stop audio alarm: Not applicable in this context.

Tab 2: Data items



Check the box next to the item you wish to display next to the anchor object. Clicking the dataitem itself will allow for setting the output/format unit when applicable.

Tab 3: Line



Line type: Set from none (=disabled) to straight line to draw a range and bearing line from the fairlead/winch position to the drop zone (anchor).

Annotation: Adds an annotation below the line showing range and bearing from object to target.

Pen style: Sets the type of the line. Choose line style: dot, dash, dash dot, dash dot dot, solid, and geometric.

Solid line thickness: Not applicable in this context.

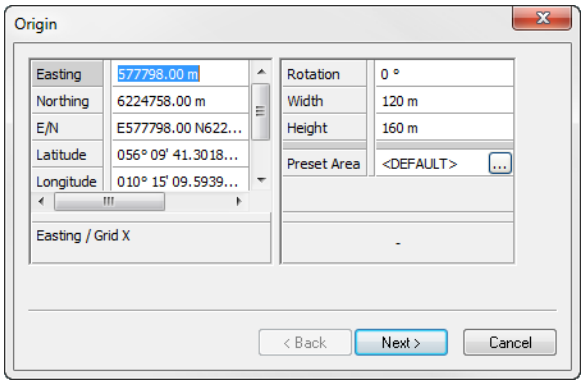
Geometric Thickness: Not applicable in this context.

5.3.1.11 Models (DTMs)

A Digital Terrain Model, is an area divided into grid cells. As you perform your survey, data is filled into these cells, and the program can calculate/display contour lines, or display the data as colour coded depth. The advantage is that the amount of computer memory needed for such a DTM is allocated when the model is created the first time. Later more and more data can be added to the model without allocating more memory.

5.3.1.11.1 New model (cursor selected)

With this option, you can create a new digital terrain model in the helmsman's program, and add data to the model on-line. When selected the mouse pointer becomes a crosshair. Click and drag the mouse to define the area of the model. The area will appear as a dashed line. From this point moving the mouse pointer will recentre the map under the model and can misplace the positioning, so be careful. Double clicking outside the area will deselect the area, double clicking inside the defined area will bring up the following menu for entering the origin of the model:



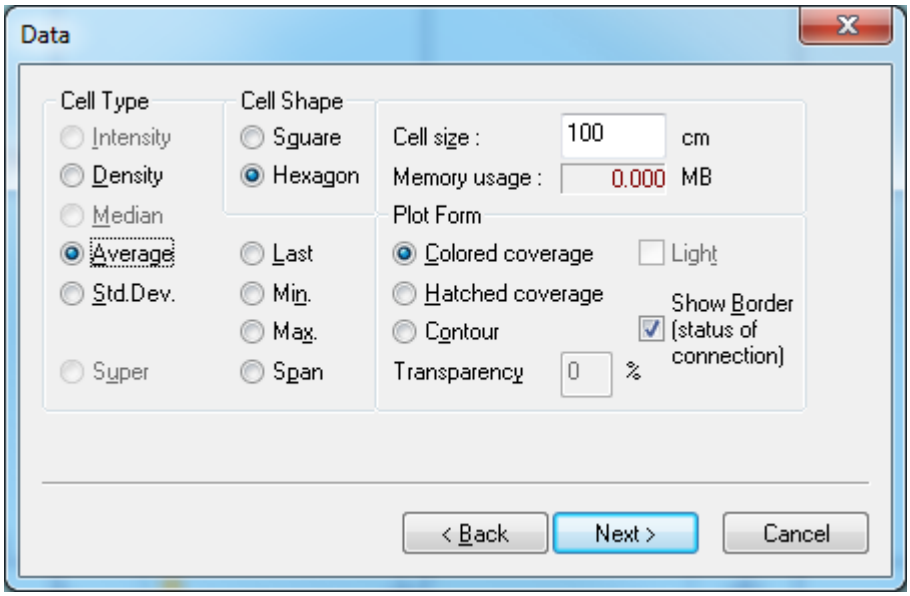
Coordinates: The position of the waypoint can be entered in grid coordinates or latitude and longitude. The datum box can be toggled between WGS84 and User datum. This means, that if you only have the position in WGS84, you can enable the WGS84 button, input the coordinates, and activate the user button. The coordinates will be converted to User datum.

Height: The elevation of the waypoint can be inserted here. This is optional.

Rotation: The heading representation of the waypoint symbol can be set here.

Width and height: Set the dimensions of the model. Click the **<…>** icon next to preset area to set templates that you can save and load for fast creation of DTMs. Preset templates can define origin position, rotation, and dimensions.

Insert information for the model and press <**Next**>. The following menu will appear:



Cell type: Choose a data type to be displayed on the model, descriptions of each cell type are listed below.

- **Intensity (if applicable):** The gray scale intensity value for data within the cell will be displayed.
- **Density (if applicable)**: The model will display the number of data sets (soundings) are within each cell.
- **Median (if applicable):** The middle value if the cell contains more than two values.
- **Average (if applicable)**: The average depth of the data (soundings) within the cell.
- **Std. Dev**. **(if applicable)**: The separation of the min and max soundings within the cell.
- **Last (if applicable):** Shows the most recent data to fill the cell. Cell values are constantly being overwritten when newer data arrives.
- **Min (if applicable)**: The value of the cell is displayed as the shallowest sounding collected in that particular cell. If a new shoal sounding is added, the value of the cell is overwritten
- **Max (if applicable)**: The value of the cell is displayed as the deepest sounding collected in that particular cell. If a new deep sounding is added, the value of the cell is overwritten.
- **Span (if applicable):** Difference (delta value) between min and max
- **Super (if applicable):** Several of the above cell types combined in one super cell type

Cell shape: Choose between square and hexagon shaped cells within the model. When selecting the cell shape to square, the computation time will decrease. When selecting hexagon, the contour curves will look more realistic.

Cell size: The size of the grid cells can be specified. It will take a lot of computer power and memory to specify a large model area with a small cell size. Cutting a cell size in half is effectively increasing the cells by a factor of 4. Note that this is set in centimeters.

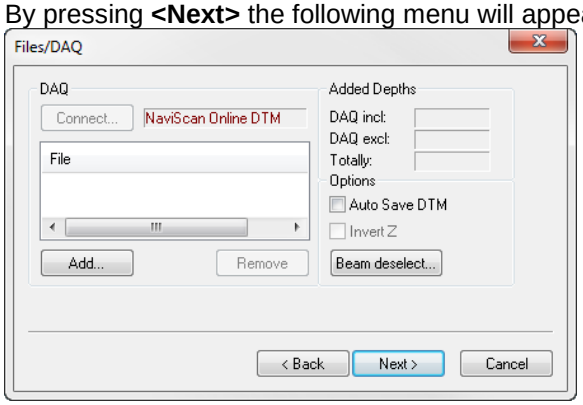
Memory usage: This will show the current memory consumption for the model if this is your first time setting up a model. This value will be 0.00MB.

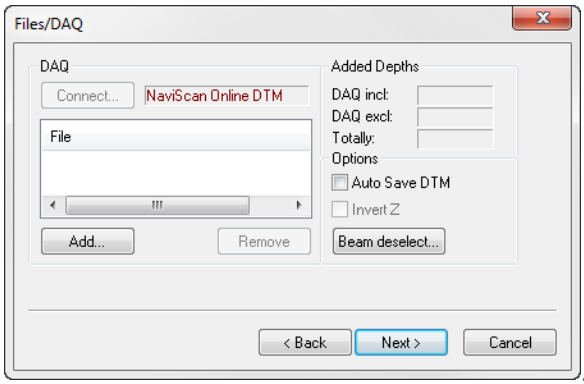
Plot form: Choose how the model displays the cell information, it can be set as solid cell colours, coloured hatch, or contour lines. The Light checkbox adds light shading to the model.

Show border: The border surrounding the DTM will be displayed (green if the DTM is online connected to fx NaviScan)

Transparency: Alpha blending value for a geo.referenced tiff image: 0% = no transparency, 99% ~ nearly full transparent.

By pressing **<Next>** the following menu will appear:

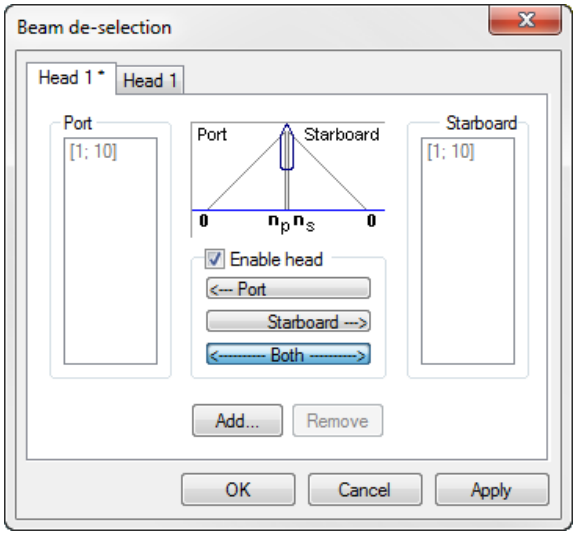




Raw data files can be read and data added to the model. Added depths windows on the right will show the number of data sets added to the DTM. Check the box to autosave the model. This is done when the online DTM is disconnected.

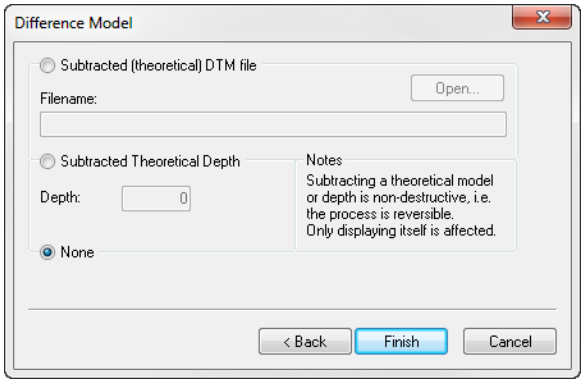
File selection: By pressing **<Add>,** raw data files from NaviScan (.sbd) can be added to the model.

Beam deselect (deprecated): The following menu will appear:



Filling out the menu as shown above, will remove the outer 10 beams in each side. The operator does not need to know how many beams there are total. The reason that there is two tabs is that you could have a two head system. If only one head is used, only the front menu should be used.

When pressing **<Next>** the following menu will appear:



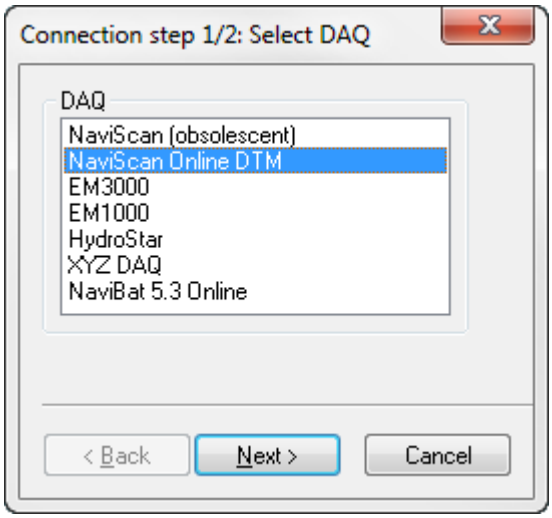
Subtracted (theoretical) DTM file: Select this option and load a digital terrain model for real-time comparison. The cells of the difference model will show the delta values cell-by-

cell between the theoretical model and the surveyed model. You can toggle between displaying depth and difference surfaces.

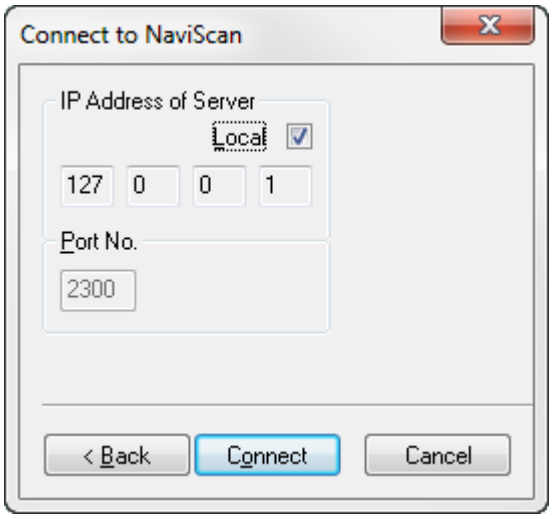
Subtracted theoretical depth: Select this option and set a plane depth for real-time comparison. The cells of the difference model will show the delta values cell-by-cell between the set depth and the surveyed depth.

None: Do not calculate a difference surface for the model.

Click the **<Finish>** button to complete the model setup. The save window will appear and ask you to save your model. Type the name for the digital terrain model and press **<Save>.** The following menu will appear:



Select your Data acquisition device you wish to write to the model. For sounding data from a multibeam echosounder, select **<NaviScan Online DTM>.** This will require settings as well in the NaviScan setup and NaviPac Config. Click **<Next>** and the following menu will appear:



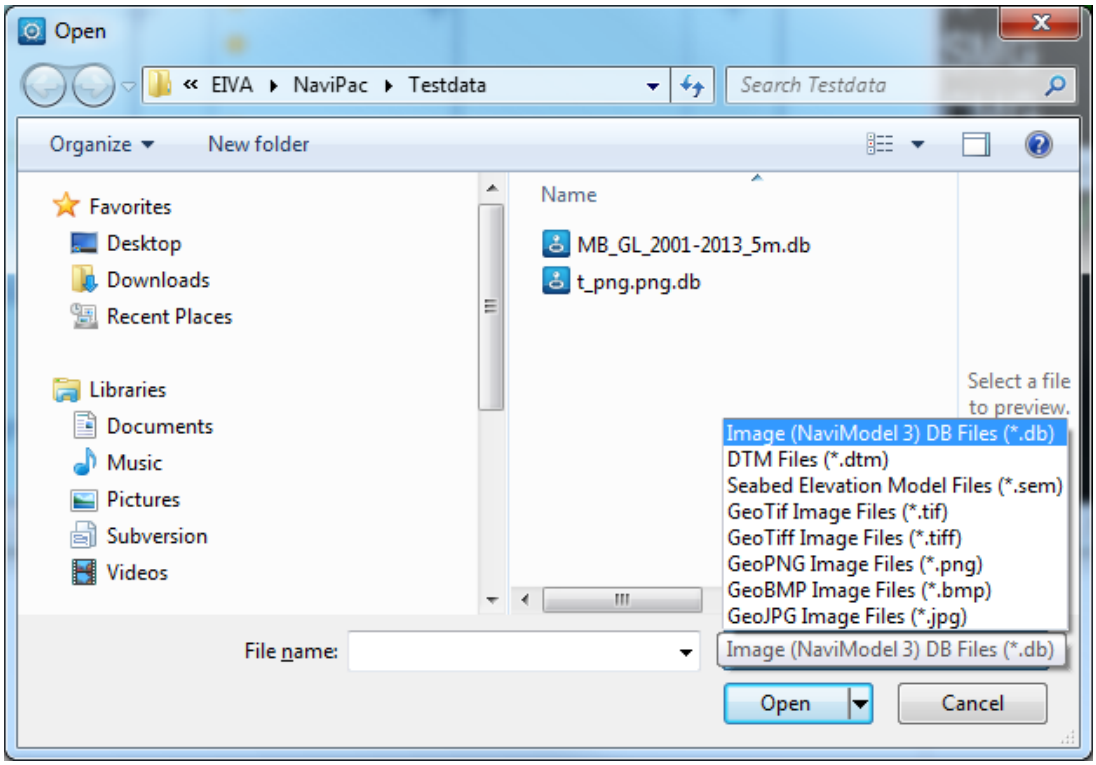
If the NaviScan program is running on another computer, you must input the IP number of this computer. If the NaviScan program is running on the same computer as the Helmsman's Display program you must enable **<Local>,** and the address will change to 127.0.0.1. If you do not want to connect to NaviScan, you can press **<Cancel>.**

5.3.1.11.2 New model (DTM)

When selecting this facility, the origin window will appear immediately and you can define the location and dimensions or upload a preset area for your model. After that, the steps for completing the model are the same as the cursor selected method.

5.3.1.11.3 Open model(s)

The following menu will appear. Select the DTM to load and press <**Open**>.

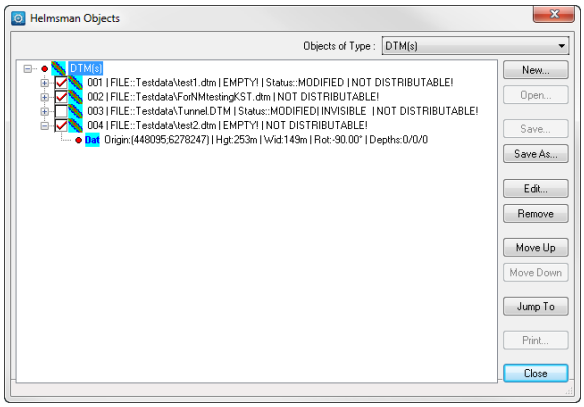


The model selected will appear on the Map View.

To change settings for the DTM, you can double click on the model, and the DTM Settings menu will appear. From here you can change the data properties, edit or connect to an echosounder, add more data to the model or setup a difference surface (if applicable).

5.3.1.11.4 List model(s)

A window displaying the DTM currently available will appear. From this window, you can create a new DTM by pressing <**New**>, you can save a DTM by highlighting a DTM and press <**Save**>. If you highlight a DTM in the window below, you can remove it from memory by pressing <**Remove**>, or you can edit the DTM settings by pressing <**Edit**>.



5.3.1.12 Distribute model(s)

If the selected point data is saved on file, the name will be distributed to all Slave Helmsman's Displays. They will read the waypoint data from the file.

5.3.1.13 Clear distributed model(s)

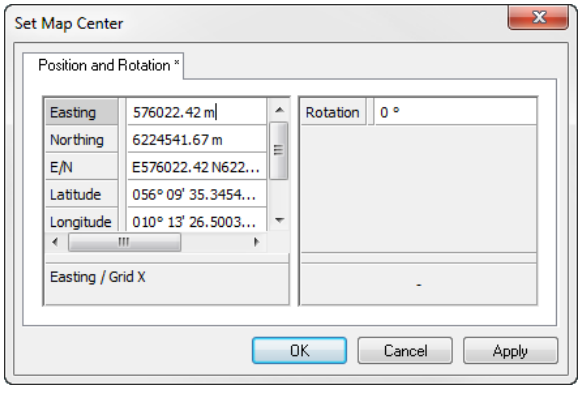
Clears all distributed waypoint files from remote computers on the local network.

5.3.1.14 Position

This menu has options for manually setting the position of the Map View window, most frequently used in the offline mode or when Autocentre is not enabled in the toolbar or Map View settings.

5.3.1.14.1 Set Map Center

The following menu will appear. Insert the new centre position for the map and press <**OK**>.



Coordinates: The origin position of the Map View can be entered in grid coordinates or latitude and longitude. The Datum box can be toggled between WGS84 and User datum. This means, that if you only have the position in WGS84, you can enable the WGS84 button, input the coordinates, and activate the user button. The coordinates will be converted to User datum.

Rotation: The heading representation of the Map View can be set here. The map rotation can also be set in the Map View settings.

5.3.1.14.2 Copy/Paste Map Center/Copy Cursor position

You can copy a position to the clipboard and paste it, similar to other text or item of data within Windows. Select **<Position>** and then **<Copy Map Center>** from the map options menu. The origin position of the Map View window will be saved to the clipboard. If you would like to save the position of the cursor, select **<Position>** and then **<Copy Cursor Position>** or use the hot key combination **<Ctrl+C>.** This position will be stored to the clipboard in the following format which can be pasted directly into the E/N window in the new position menu**.**

E/N Copy position format: 560022.460 6222831.663

To instantly center the map around a position that is currently saved in your clipboard, select **<Position>** and then **<Paste Map Center>** or use the windows hot key combination **<Ctrl+V>**.

5.3.1.14.3 Make fix/event

Selecting this from the menu will immediately make a manual event. A symbol will be left at the position of the Vessel (or selected object) at the time the mouse button was released. This information is also written to the event log. See the event settings menu in NaviPac Config or NaviPac Online for the location of the event log.

5.3.1.14.4 Toolbars and Printing

Toolbars Menu: The toolbars menu can toggle on/off the map toolbar with the zoom icons and the A-G letter bar. This can increase the useable size of the Map View window.

Print: Print active (focused) Map View.

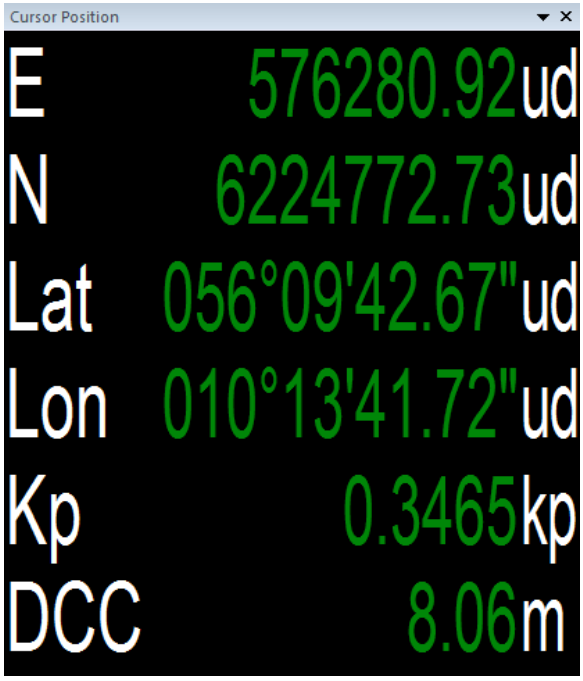
Print preview: Preview print of active (focused) Map View. Note: The preview function is not very accurate.

Print set-up: Select and set-up the printer.

Additional Print set-up: Select tile subdivisions for smaller printing (use this option in conjunction with bitmap printing, i.e. when direct printing is inadequate for some reason).

5.3.2 Cursor position

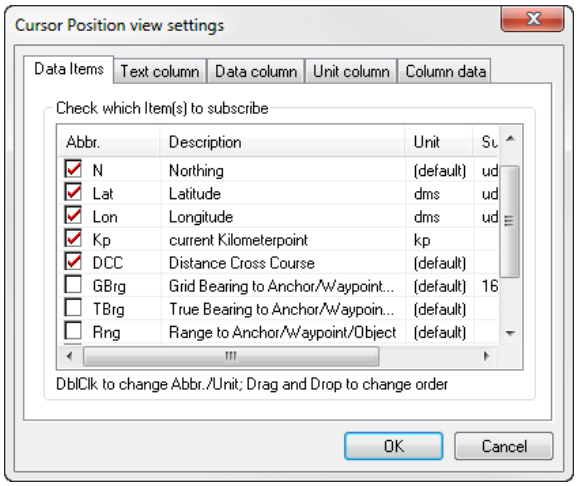
The cursor position view will show the position of the cursor in either grid and or geographical coordinates. Also the range and bearing from the vessels reference position to the cursor can be displayed, KP and Distance Cross Course (DCC) can be displayed if a Runline is loaded. By left clicking the mouse, the range and bearing between any two positions on the map can be displayed.



5.3.2.1 New Cursor position view

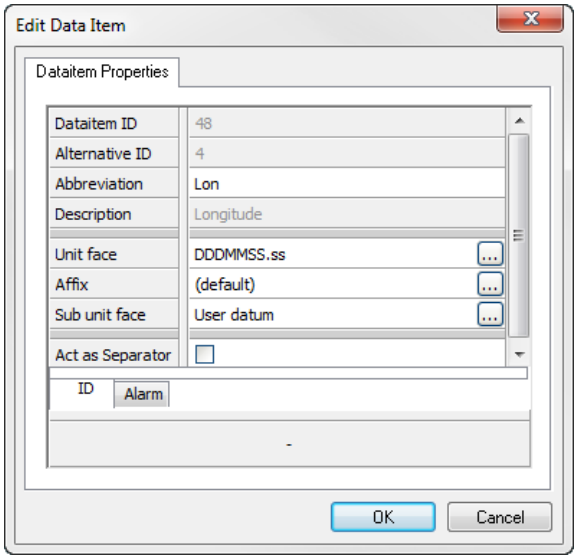
A menu containing the following tabs will appear:

Tab 1: Cursor position:



Select which data items you wish to be displayed in the cursor position window. A list of available abbreviations and descriptions is available in Appendix A.

To edit the abbreviations or units, double click on an item and the following menu will appear:



Unit Face (DDDMMSS.ss): The position of the cursor can be displayed in many different formats, click on the **<…>** icon to choose your desired format.

Affix: The position can contain a prefix or suffix directly in the data outside of the label that NaviPac provides. See ‘Figure 104’ below for an example.

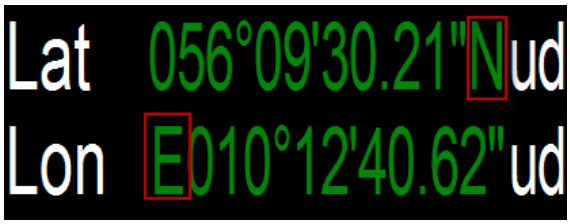


Figure 104 - Example of position prefix and suffix

Sub unit face: The datum for the displayed position can be selected.

Act as separator: Place a horizontal line between this data entry and then next within the window.

Tab 2,3,4 Text/Data/Unit column

This provides facilities to adjust font, foreground colour and background colour on the text, data and unit column. See: 5.3.5.1 New Runline Control view

Tab 5: Column width

The width of each column can be adjusted. You can adjust any two columns and the third column will auto populate with the remaining value to total 100%. If the unit width is set to 0% it will not be displayed. See **5.3.5.1 New Runline Control view**

5.3.3 Dynamic object

From this menu you can select to open a new dynamic object view, or to edit the setting of a present view. You will need to create a separate window for each dynamic object you wish to track. It is also possible to have two windows tracking the same object.

5.3.3.1 New dynamic object view

A dynamic object view can show information like position, course, speed, etc., for any object. The object could be the vessel (default), an offset position, a HPR transponder, an object received from a radar or AIS, etc.

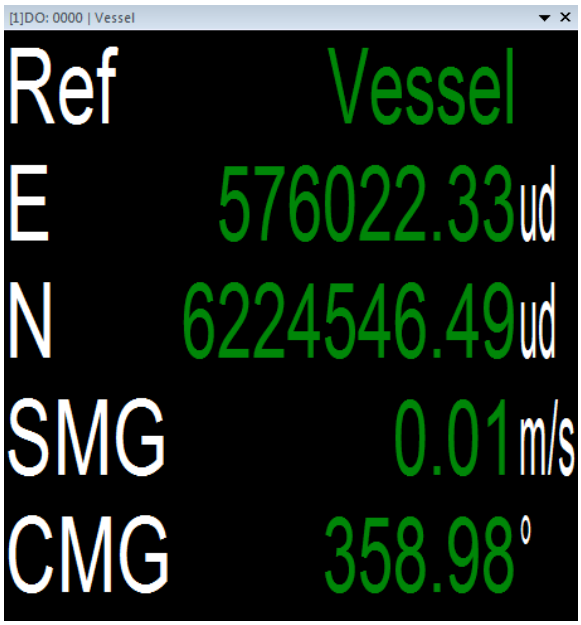
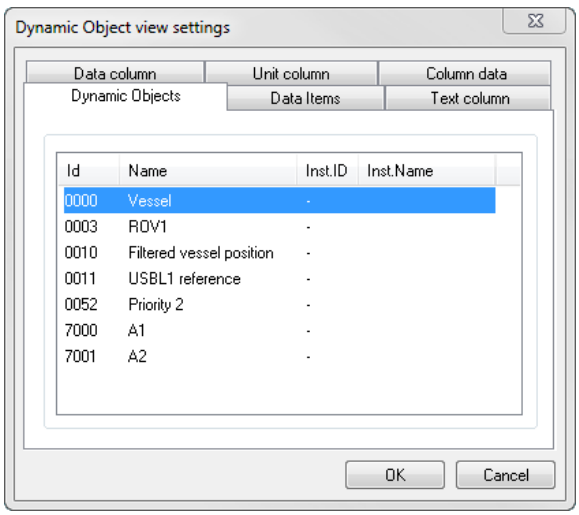


Figure 105 - Example of a dynamic view

5.3.3.2 View settings

To edit the settings of the dynamic object view right click and select **<View Settings>.** A menu, containing the following tabs, will appear:

Tab 1: Position



From this menu, you can select which object should deliver data to the object window. The default is *Vessel.*

Tab 2 through 6: See: 5.3.5.1 for more menu options

5.3.4 Multiple DAQs

From this menu you can select to open a new multiple DAQs view, or to edit the setting of a present view.

5.3.4.1 New multiple DAQs view

A multiple DAQs view can show information about instruments/sensors currently interfaced by NaviPac. Each DAQ dataitem is defined by the available channel(s) of the selected instrument.

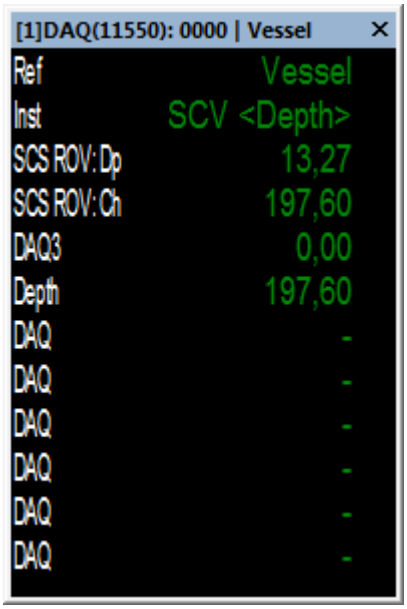
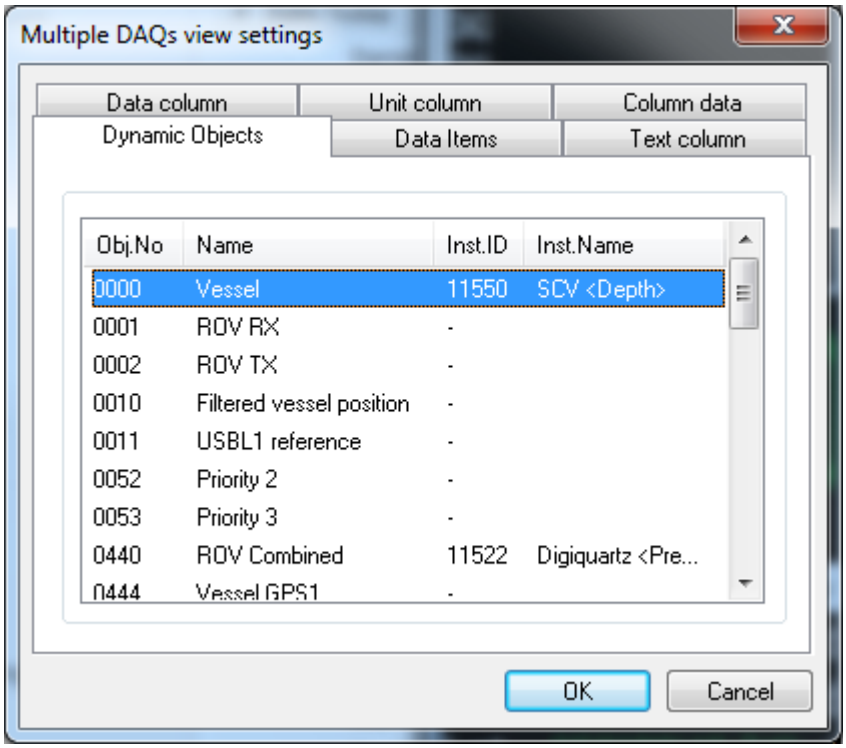


Figure 106 - Example of a multiple DAQs view

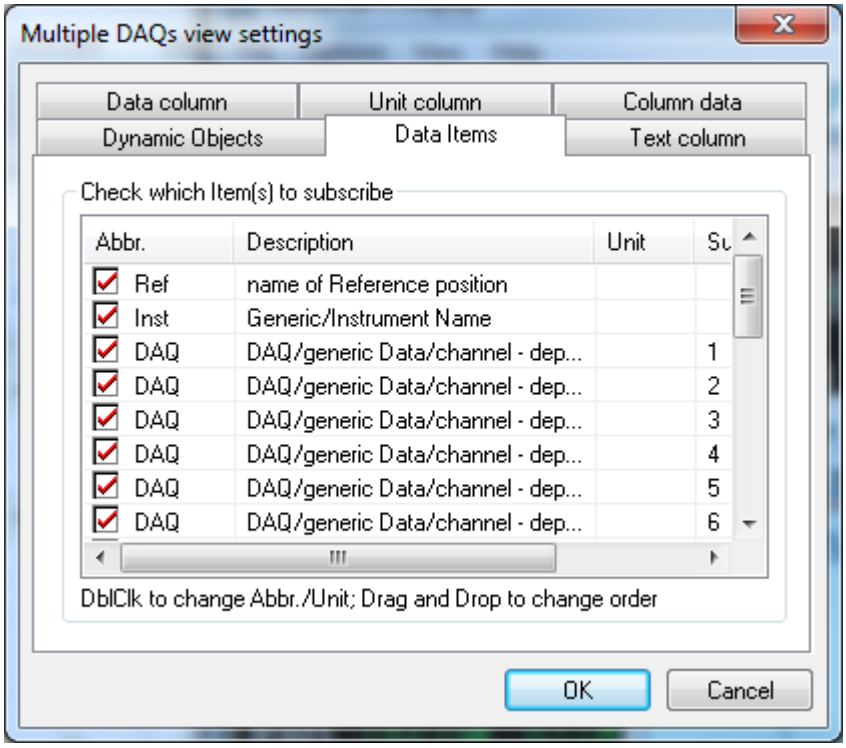
5.3.4.2 View settings

To edit the settings of the multiple DAQs view right click and select **<View Settings>.** A menu, containing the following tabs, will appear:

Dynamic Objects: Select the dynamic object with attached instrument(s).



Data Items: Data items which are available in this context. See chapter 8 Data Items.



Select which data items you wish to be displayed in the cursor position window. A list of available abbreviations and descriptions is available in chapter ‘8 Data Items’.

Tab 3 through 6: See: 5.3.5.1 for more menu options

5.3.5 Runline Control

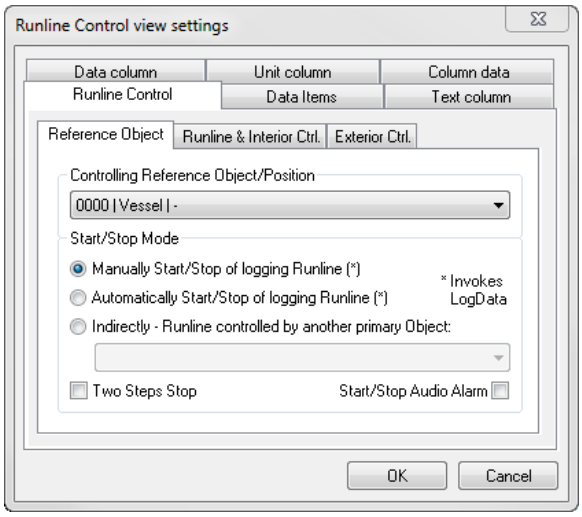
A Runline Control view is a window that displays information about an objects position in relation to a Runline. The Runline Control view also includes a Survey Bar, where you can start/stop the survey and select new segments. The Survey Bar can be detached from the Runline Control view and placed elsewhere on the Helmsman’s Display.

Figure 107 - Example of a runline control view

5.3.5.1 New Runline Control view

When selected a new bland Runline Control window will appear. Only the first Runline Control window will come with a toolbar. To edit the settings of the Runline Control window, right click on the window and click **<View Settings>.** The following menu containing seven tabs will appear:

Tab 1: Runline Control



Reference object tab: Here you can select the object, for which the DAL/DOL/KP calculation should be performed.

Runline Control mode, Manually start/stop of Runline: When you press the <**Start>** button once on the Survey Bar, the Runline will become yellow, and DAL/DOL calculation will start. Next time you press the <**Start**> button, the line will become red and recording of data will start.

Runline Control mode, automatically start/stop of Runline: When you press the <**Start>** button once on the Survey Bar, the Runline will become yellow, and DAL/DOL calculation will start. As soon as the selected object passes the start of the line, the line will become red, and recording of data will start.

Runline Control mode, indirectly: Using this facility another reference position: ROV1 can be forced to use the same segment as: Runline Controlled by: Vessel.

Two Steps Stop: If checked then: pressing Start first time => selected (yellow) mode; pressing Start second time => logging (red) mode; pressing Stop first time => selected mode; pressing Stop second time = passive (green/grey) mode. If NOT checked (default) then pressing Stop will make it go straight to passive (green) mode, bypassing the selected (yellow) mode if in logging (red) mode.

Start/Stop Audio Alarm: Sound audio windows alarm when starting and stopping the runline.

Runline & interior control tab: The Runline, which should be used as a reference, can be selected here. The reference Runline can also be selected by clicking the <**Select**> icon on the Survey Bar. The mouse cursor will become a cross and you can click a on the Runline to select.

Auto inverting:

- **Position based**: The Runline will always have a heading that points away from the position of the vessel.
- **Heading based**: The Runline will always have a heading that is less than 100 degrees from the vessels heading.
- **CMG based:** The Runline will always have the heading that is closest to your tracking object's current Course Made Good.

Automatic switching:

- **Distance (+/-):** This default method, will switch to the next segment when the object is distance (default 1m) along the next segment.
- **Radius:** This method will switch to the next segment when it is within X meters.
- **Bisector:** This method will switch to the next segment, when the object crosses the bisector.

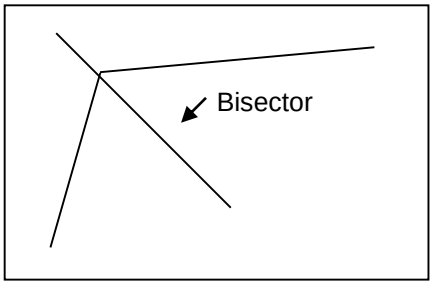
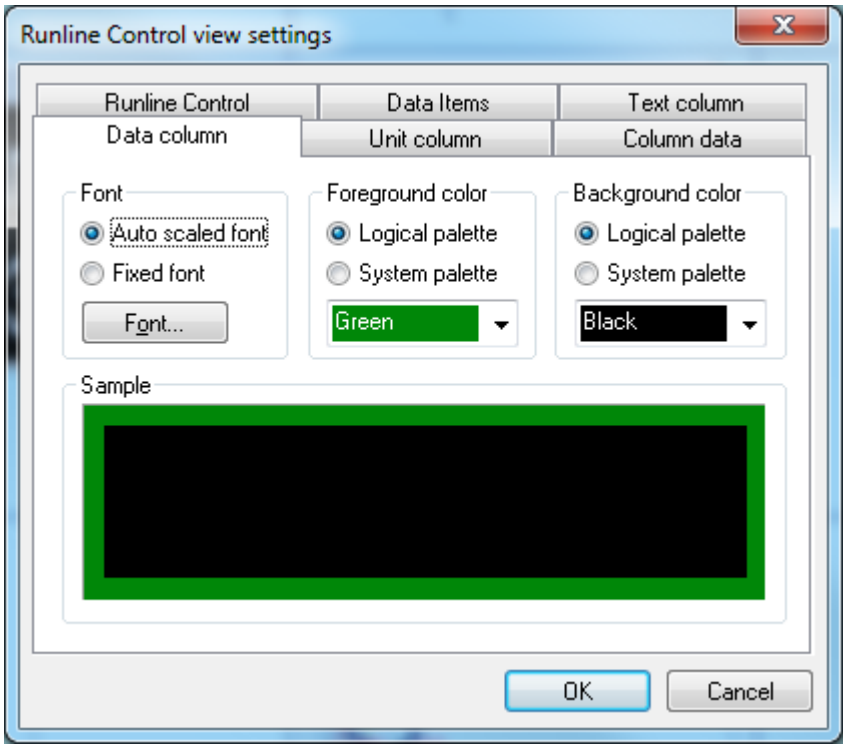


Figure 108 - Understanding a bisector

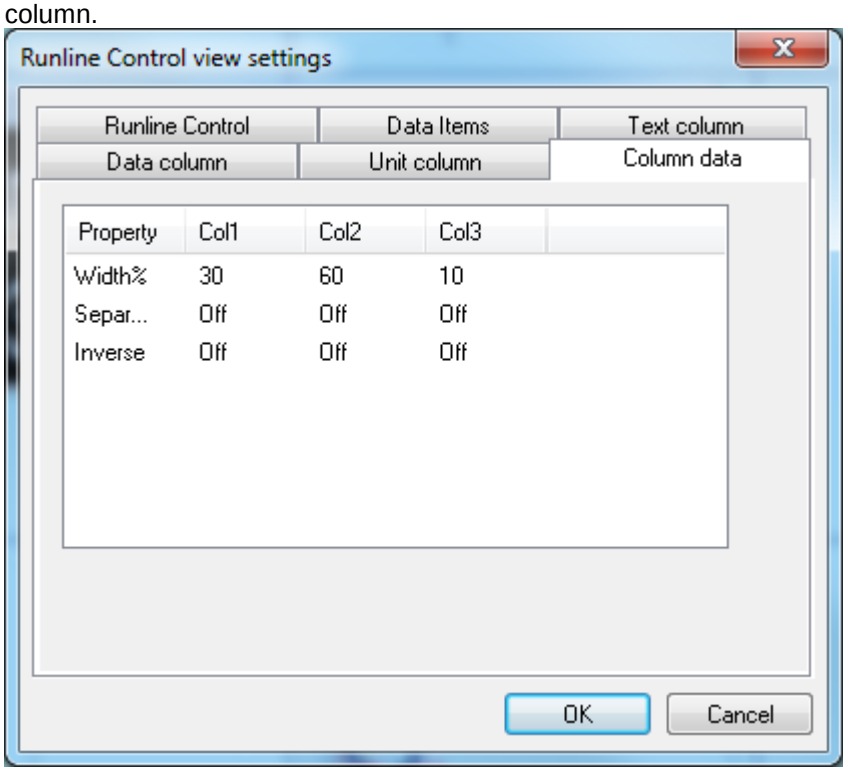
Runline splitting: Check the box to enable auto splitting of Runline files. Enter your desired minimum segment length into the value box. Check the "clean up" box to remove clipped segments.

Exterior control tab: Check the box to enable a run-in or run-out extension to the active Runline. This will only show when the line is active. A red dashed line will denote the start of the actual Runline. Check the logging limitation zone and select a display file to only allow logging within a certain area.

Text column, Data column, Unit column: Set colours and font for each column.



Column data: Define the width in %, enable a separator and flag inverse colours of each column.



5.3.5.2 Runline

Typically at least one Runline Control view must have focus.

5.3.5.2.1 New Runline

Please see **5.3.1.8.1 New Runline**

5.3.5.2.2 Open Runline

Please see **5.3.1.8.3 Open Runline**

5.3.5.2.3 Select Runline

This menu point will only be available if one or more Runlines are available on the map. The cursor will turn into a cross. Move the cross to the segment you want to make active and double click. You can also select Runlines by pressing <**Select**> on the Survey Bar:

5.3.5.2.4 Start (active Runline)

The program will select the closest segment, and start to calculate DAL, DOL and KP. This is the same as pressing <**START**> on the Survey Bar**:**

5.3.5.2.5 Next segment

If the line consists of several segments, this will select the next segment as the reference for calculations. This is the same as pressing <**NEXT**> on the Survey Bar:

Only enabled if a next segment is selectable.

5.3.5.2.6 Next parallel Runline

This will select the next left or right parallel segment. This is the same as pressing <**NEXT**> on the Survey Bar:

Only enabled if parallel lines are available. Used in coherence with <**Reverse**>.

5.3.5.2.7 Stop active Runline

This will stop the calculations of DAL, DOL and KP. This is the same as pressing <**STOP**> on the Survey Bar.

5.3.5.2.8 Invert active Runline

The direction of the selected Runlines will be inverted. This is the same as pressing <**Invert**> on the Survey Bar. Please see **5.3.5.1 above** for inversion rules.

5.3.5.2.9 Revert parallel stepping

The step direction of the next parallel Runline/segment which will be active when stepping between/across Runlines. Going to the right of the Runline creation direction is default. Going to the left is reversed. This is the same as pressing <**Reverse**> on the Survey Bar:

Only enabled if parallel lines are available. Used in coherence with <**Next parallel**>.

5.3.5.2.10 List Runline(s)

Please see **5.3.1.8.4 List Runline(s)**

5.3.5.2.11 Distribute Runline(s)

This will send the names of all open Runlines to any Slave Helmsman's display. Each Slave Helmsman's Display will read the Runline data from the Master Helmsman's Display home directory.

5.3.5.2.12 Distribute sideboat Runline (deprecated)

Special function made for Finnish Environment Institute.

5.3.5.2.13 Reset Runline(s)

The Runline attributes: partially surveyed / surveyed, will be reset to: not surveyed, and the Runlines will appear with a green colour (default).

5.3.5.2.14 Clear Runline(s)

All Runlines will be removed from memory.

5.3.5.2.15 Settings

Please see **5.3.1.8.11 Settings…**

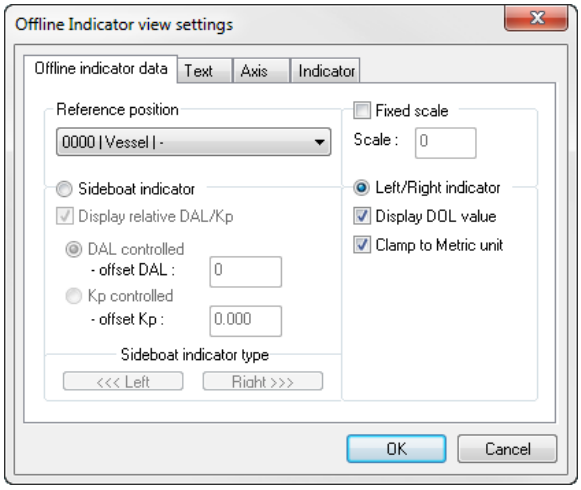
5.3.5.3 Waypoint (deprecated)

Special function made for older DP systems (Kongsberg). This will convert a curved segment into a number of waypoints that a DP system should follow.

5.3.6 Offline Indicator

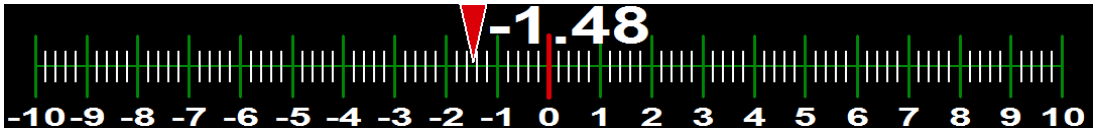
From this menu you can select to open a new Offline indicator view, or to edit the setting of the present view. To edit the settings, the offline indicator must be highlighted (has focus). A menu, containing four tabs, will appear:

Tab 1: Offline indicator data



Reference position: From this combo bar, you can select which object should give data to the offline indicator. It is possible to have more than one indicator display tracking separate or similar objects.

Left/Right indicator, display DOL: When this option is enabled, the Distance Off Line will be displayed on the offline indicator:



Side boat indicator: This is a special function, developed for the Finnish Environment Institute, and should not be used by others.

Fixed scale, scale: By default the offline indicator is changing scale, as the vessel gets closer to the line. The lower scale is ±10m. A fixed scale can be inserted here.

Tab 2, 3, 4: Text, axis, indicator: See: 5.3.5.1 for more menu options

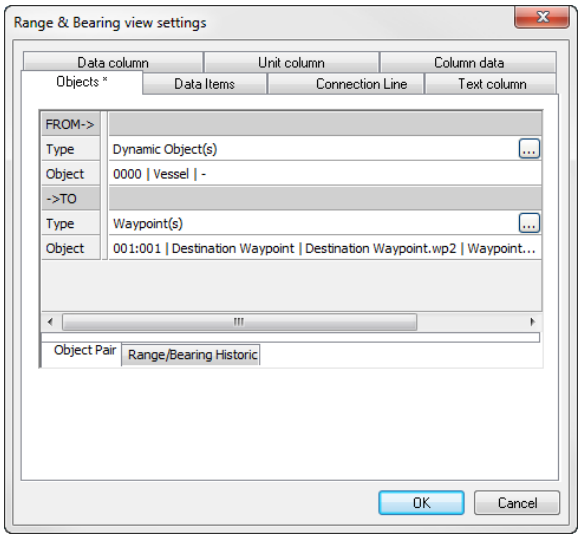
5.3.7 Range & Bearing (single)

The range & bearing view is able to show the range and bearing from any object on the map to another object.

5.3.7.1 New range & bearing view

A menu containing the following tabs will appear:

Tab 1: From

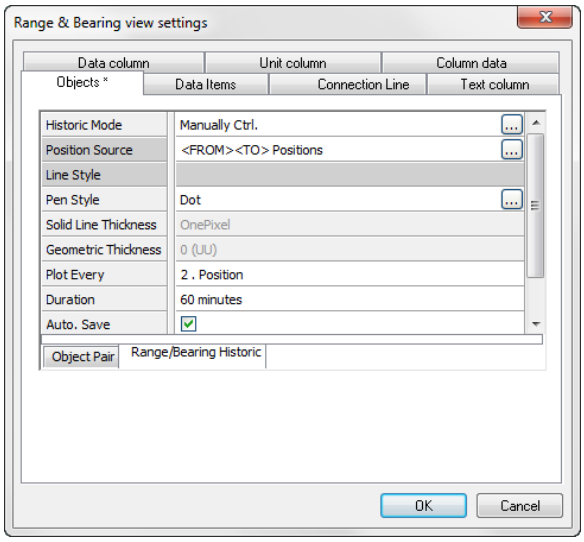


From: The object, from where the range and bearing should be measured, can be selected from this list box.

To: The target object, where the range and bearing should be measured, can be selected from this list box.

Type: From this list box the type of the target object can be selected between dynamic object, waypoints or targets.

Object: The object name, given by the NaviPac system or included in the *.shp or .wp2 file, will be displayed.



Range/bearing historic tab: At the bottom of the menu, clicking the range/bearing history tab will show the above menu. Set the historic mode on to view historic ranges and bearings.

Position source: The user can choose from “To” position only, “From” position only or “To/From” and “From/To” options. The To- and From-position refer to the corresponding to-object and from-object. When either To/From or From/To is selected a fishbone pattern is shown rather than a trackplot.

Historic mode: The user can set historic mode off, or choose between manual or Runline Controlled mode. The historic mode is similar to just showing trackplots, e.g. when in Runline Controlled mode a historic (trackplot) line is only shown when a runline is active of either objects (typical the from-object).

Pen style: Sets the type of the line, choose line style: dot, dash, dash dot, dash dot dot, solid, and geometric.

Solid line thickness: If pen style is set to solid, you can set the thickness from predefined thicknesses: one pixel, thin, thick, and fat.

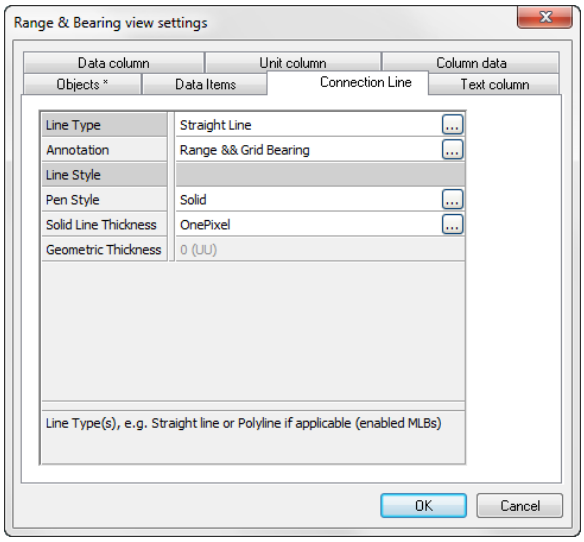
Geometric thickness: If pen style is set to geometric, you can set the actual thickness of the line in user units (UU) which is whatever scale is set in NaviPac Config.

Plot every: Set so that NaviPac plots the desired historic data every X records.

Duration: Sets a maximum duration for plots.

Auto.save: Check to save plots as displayline inside NaviPac memory.

Tab 2: Connection line



Line type: Set from (none) to straight line to draw a range and bearing line between the from-object and the to-object.

Annotation: Adds an annotation below the line showing range and bearing form object to target.

Pen style: Sets the type of the line, choose line style: dot, dash, dash dot, dash dot dot, solid, and geometric.

Solid line thickness: If pen style is set to solid, you can set the thickness from predefined thicknesses: one pixel, thin, thick, and fat.

Geometric thickness: If pen style is set to geometric, you can set the actual thickness of the line in user units (UU) which is whatever scale is set in NaviPac Config.

Tab 3-6 Text/Data/Unit column

This provides facilities to adjust font, foreground colour and background colour on the text, data and unit column. **See: 5.3.5.1 New Runline Control view.**

Tab 7: Column width

The width of each column can be adjusted. If the unit width is set to 0% it will not be displayed. See **5.3.5.1 New Runline Control view.**

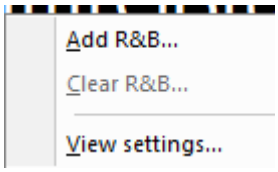
5.3.8 Multiple 'Range & bearing's view

The Multiple 'Range & Bearing's view is able to show the range and bearing from any object on the map to another object.

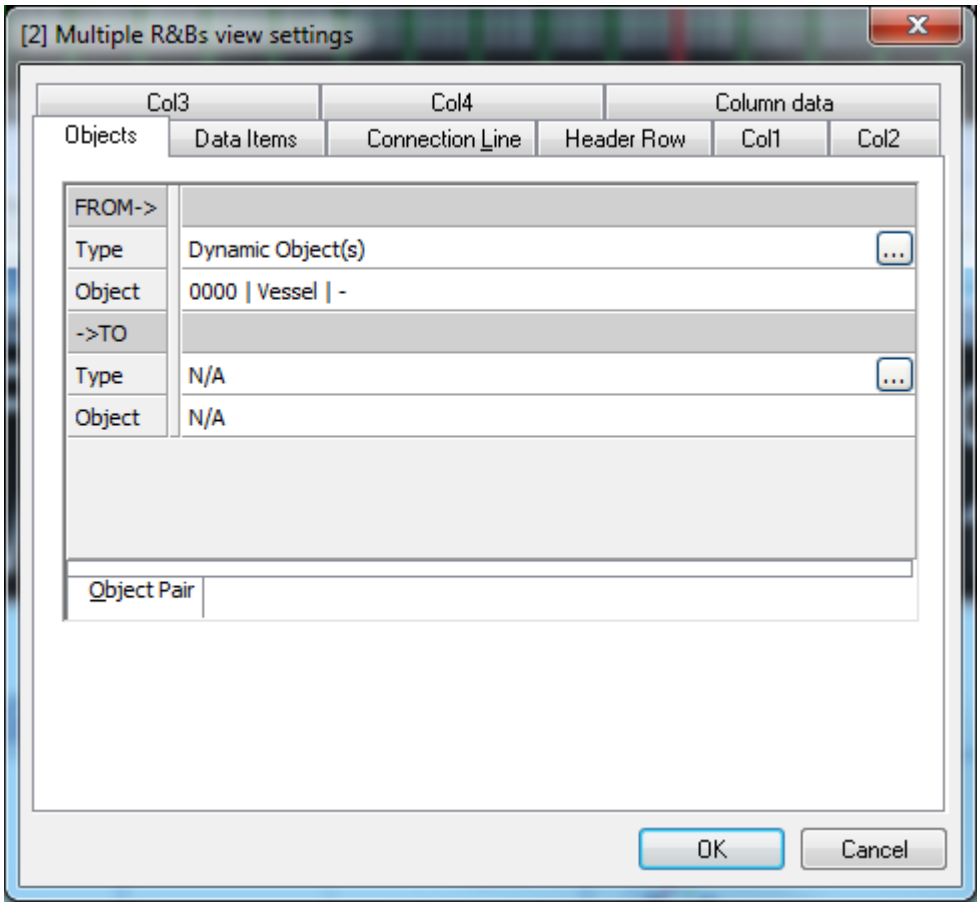
Figure 109 - Example of a multiple 'Range & Bearing's view

5.3.8.1 New multiple 'Range & Bearing's view

Selecting this menu item opens an empty Multiple 'Range & Bearing's view. Right click to open the following context menu:



Add R&B: Select menu item to add a new range & bearing row. A menu containing the following tabs will appear:



Tab 1-4: See View settings below.

Tab 5-8: Col1, Col2, Col3, Col4: Define colours for each column.

Tab 9: Column width

The width of each column can be adjusted. If the unit width is set to 0% it will not be displayed. See **5.3.5.1 New Runline Control view.**

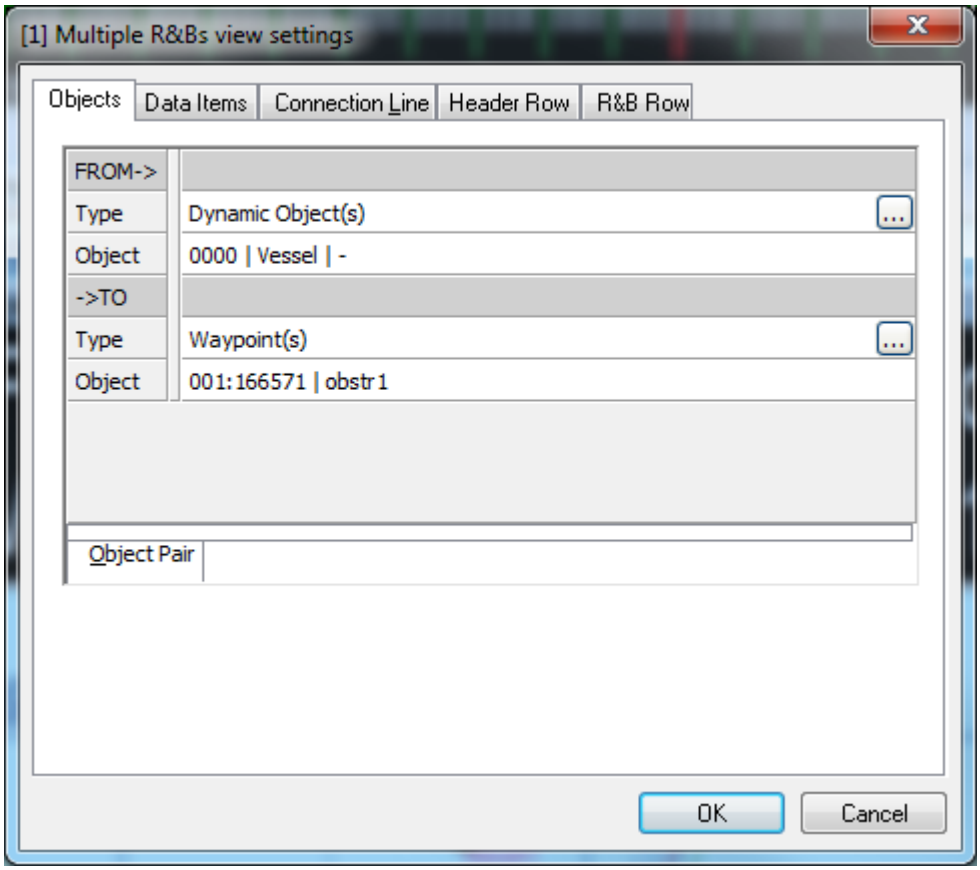
Clear R&B: Clear the range & bearing row.

View settings: See View settings below.

5.3.8.2 View settings

A menu containing the following tabs will appear. This is similar to just double-click an R&B row line.

Tab 1: Objects



From: The object, from where the range and bearing should be measured, can be selected from this list box.

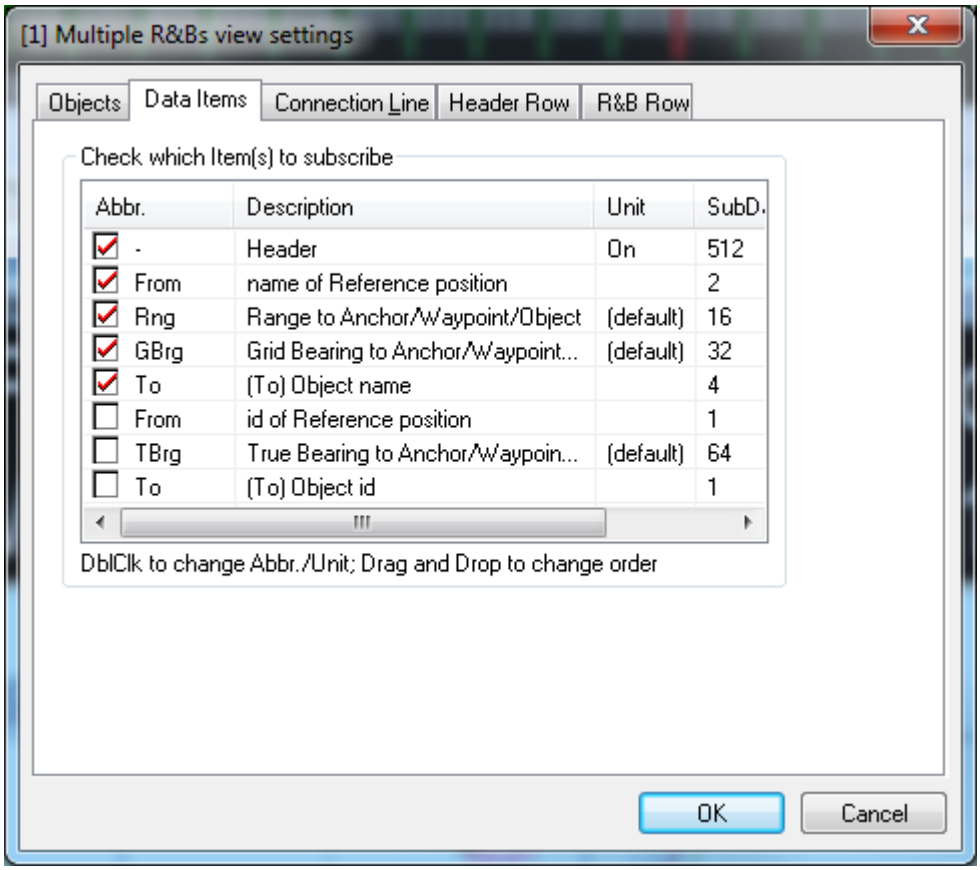
To: The target object, where the range and bearing should be measured, can be selected from this list box.

Type: From this list box the type of the target object can be selected between dynamic object, waypoints or targets.

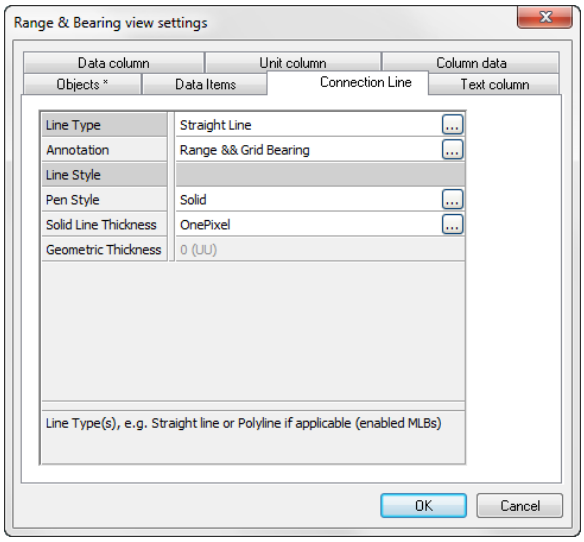
Object: The object name, given by the NaviPac system or included in the *.shp or .wp2 file, will be displayed.

Tab 2: Data Items

Data items which are available in this context. See chapter ‘8 Data Items’.



Tab 3: Connection line



Line type: Set from (none) to straight line to draw a range and bearing line between the from-object and the to-object.

Annotation: Adds an annotation below the line showing range and bearing form object to target.

Pen style: Sets the type of the line, choose line style: dot, dash, dash dot, dash dot dot, solid, and geometric.

Solid line thickness: If pen style is set to solid, you can set the thickness from predefined thicknesses: one pixel, thin, thick, and fat.

Geometric thickness: If pen style is set to geometric, you can set the actual thickness of the line in user units (UU) which is whatever scale is set in NaviPac Config.

Tab 4-5: Header Row, R&B Row: Define colours for each row.

5.3.9 Distance counter

The distance counter will measure the distance travelled from a preset position. The counter can be paused and reset like a stop watch.

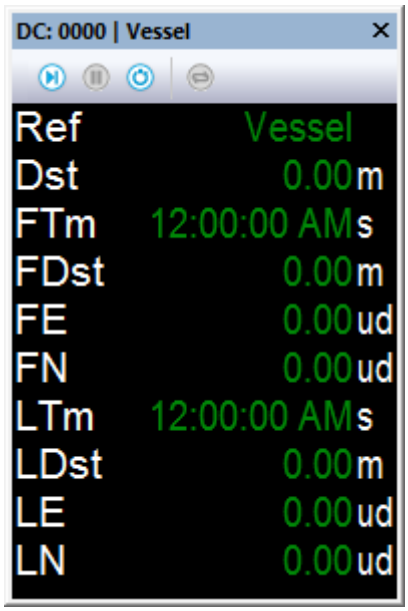
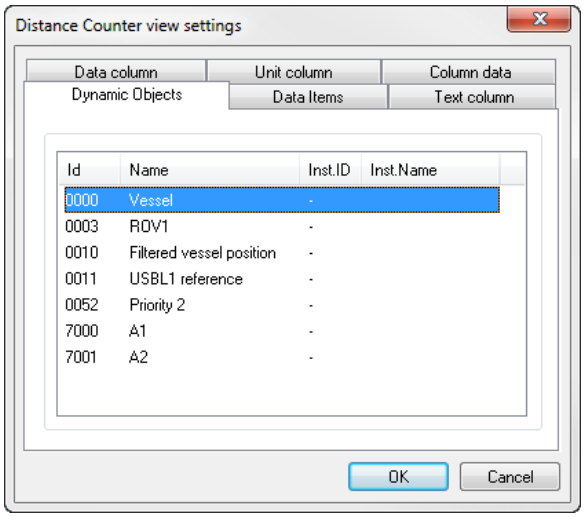


Figure 110 - Example of a Distance counter view

5.3.9.1 New distance counter view

By right clicking inside the window and selecting **<View settings>,** a menu containing the following tabs will appear:

Tab 1: Dynamic Objects



Tab 2 to 6: See: 5.3.5.1 for more menu options

5.3.9.2 Start

The Distance counter view will start to count. This is the same as pressing <**Start**> on the distance counter bar.

5.3.9.3 Pause

The distance counter will stop counting. This is the same as pressing <**Pause**> on the distance counter bar.

5.3.9.4 Reset

This will reset the distance counter to 0 or a pre-set value. This is the same as pressing <**Reset**> on the distance counter bar.

5.3.9.5 Reverse

Reverse counter (count down). Option is available if the counter has been reset.

5.3.10 Rigmove

A window displaying the current rigmove will be displayed:

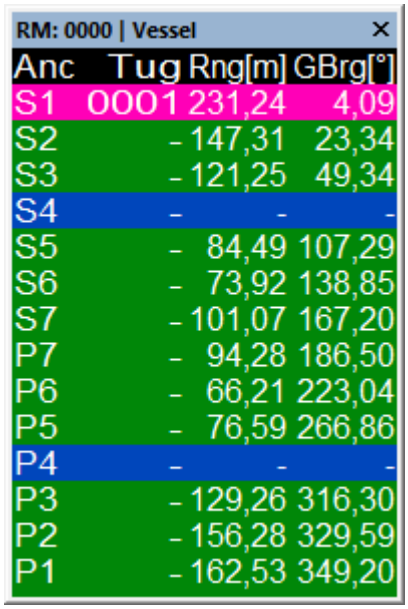
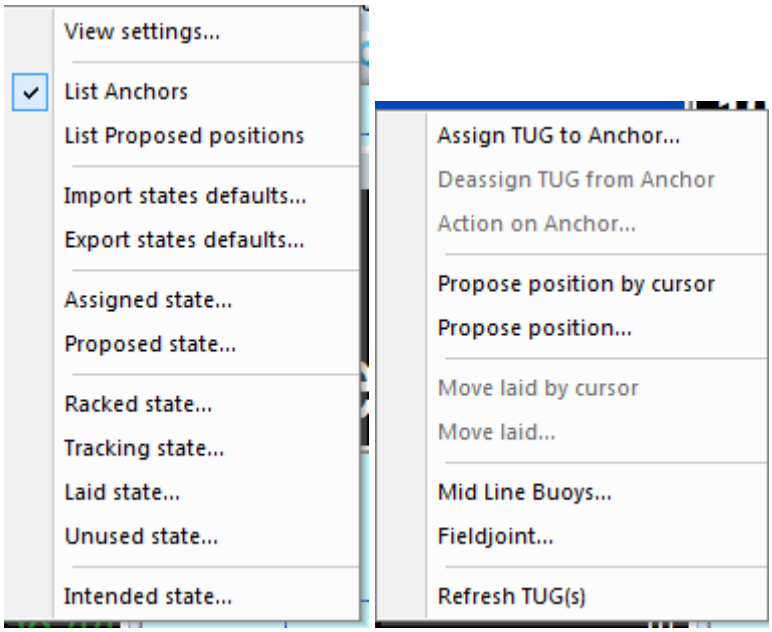


Figure 111 - Example of a Rigmove view, listing anchors

See the document 'A11_Rig_Move.pdf' found at training.eiva.com for further information on this subject.

5.3.10.1 New Rigmove view

Selecting this menu item opens an empty Rigmove view. Either right click and left click to open the following 2 context menus, respectively:



List Anchors:

List states and range and bearing for anchors. See example view in Figure 111.

List Proposed positions:

List range and bearing for proposed positions.

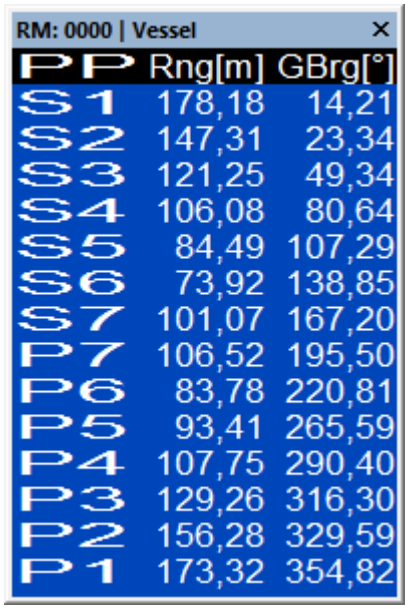


Figure 112 - Example of a Rigmove view, listing proposed positions

Import states defaults:

Import template for anchor symbolization, using a .wp2 file to hold the template.

Export states defaults:

Export the current anchor symbolization as a template for anchor symbolization, using a .wp2 file to hold the template.

States: Assigned, Proposed, Racked, Tracking, Laid, Unused, and Intended

Set symbolization for various states, e.g. overlaid dataitems, symbol/shape, line style and colours (where applicable).

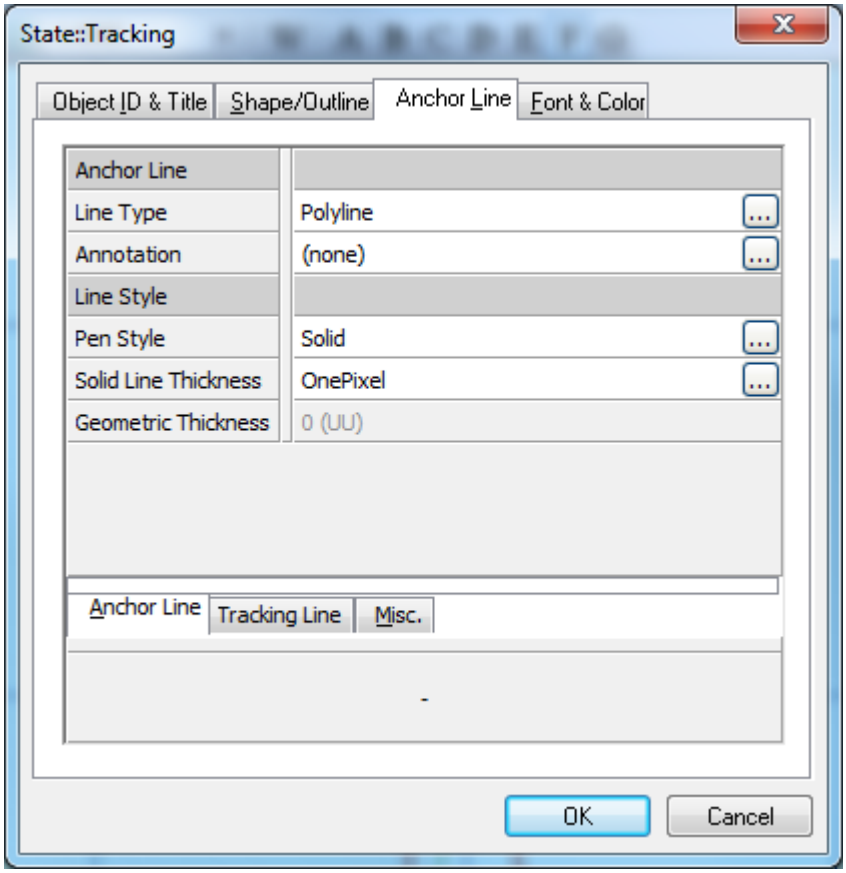
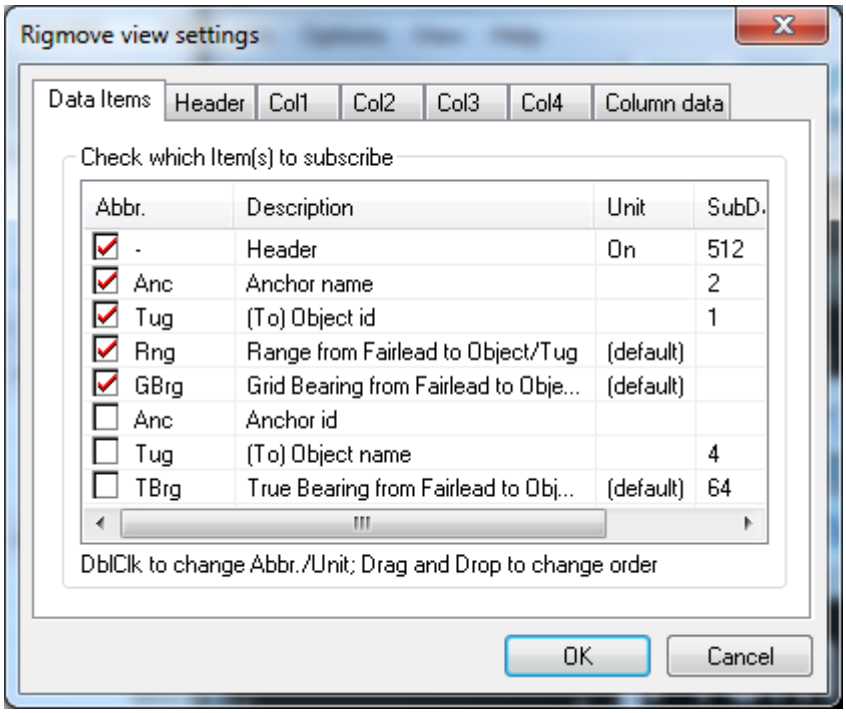


Figure 113 - Example of a properties for the Tracking state

5.3.10.2 View settings

By right clicking on the window and selecting **<View settings>**, a menu containing the following tabs will appear:



Tab 1: Data Items

Data items which are available in this context. See chapter '8 Data Items'.

Tab 2-6: Header/ColX/Column data See: 5.3.5.1 for more menu options

5.3.11 Anchor Handling

A window displaying the current anchor handling will be displayed:

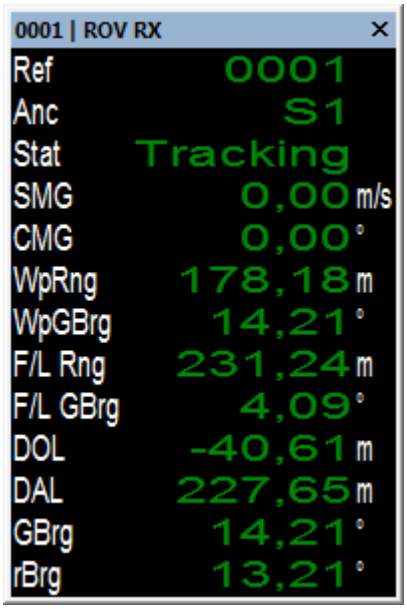
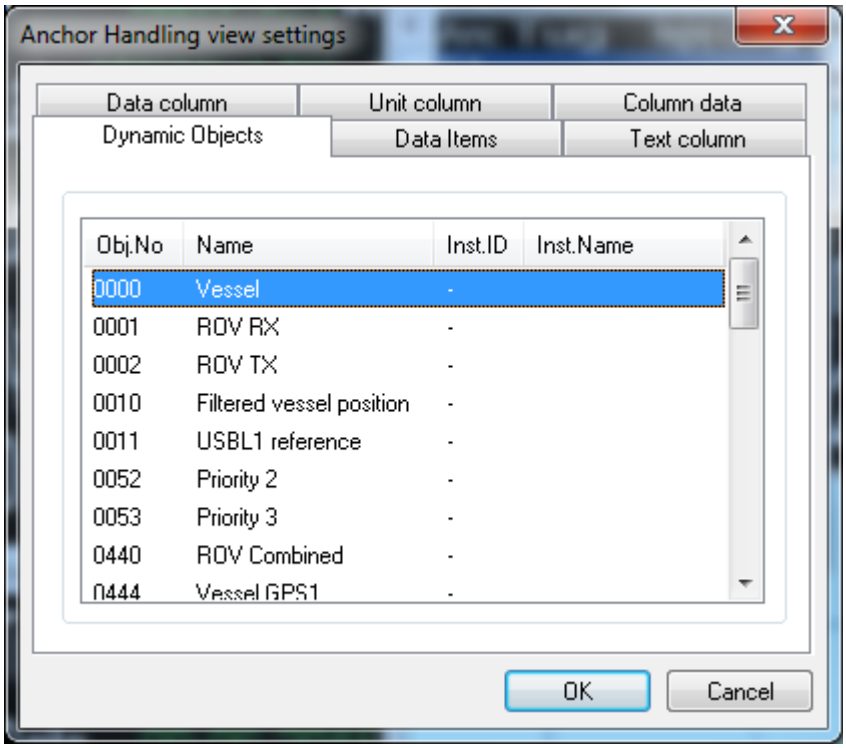


Figure 114 - Example of an Anchor handling view

See the document 'A4_Tug management.pdf' found at training.eiva.com for further information on this subject.

5.3.11.1 New Anchor Handling view

By right clicking on the window and selecting **<View settings>**, a menu containing the following tabs will appear:



Tab 1: Dynamic objects

Select the dynamic object representing the Tug handling the anchor (pick up and drop).

Tab 2,3,4: Text/Data/Unit column, Column data: See: 5.3.5.1 for more menu options

5.3.12 Time & Date

A window displaying the current date and time will be displayed:

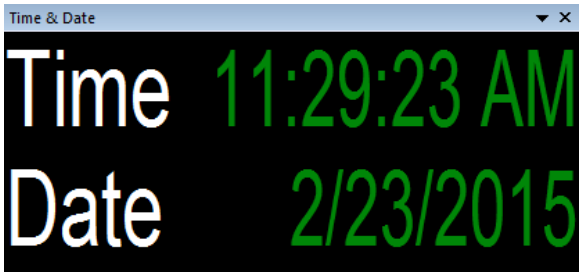
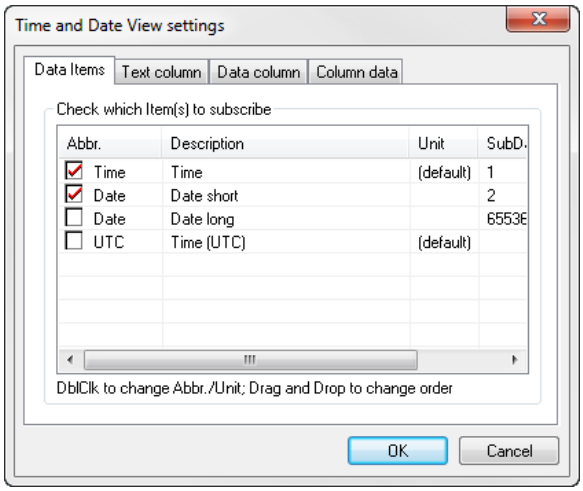


Figure 115 - Example of a Time & Date view

5.3.12.1 New Time & Date view

By right clicking on the window and selecting **<View settings>**, a menu containing four tabs will appear:

Tab 1: Data Items



Tab 2,3,4: Text/Data/Unit column, Column data: See: 5.3.5.1 for more menu options

5.4 The Help menu

The following selections are available.

5.4.1 Contents

This will open the Help manual (this .pdf file). Make sure a default .pdf reader is installed.

5.4.2 Search for help

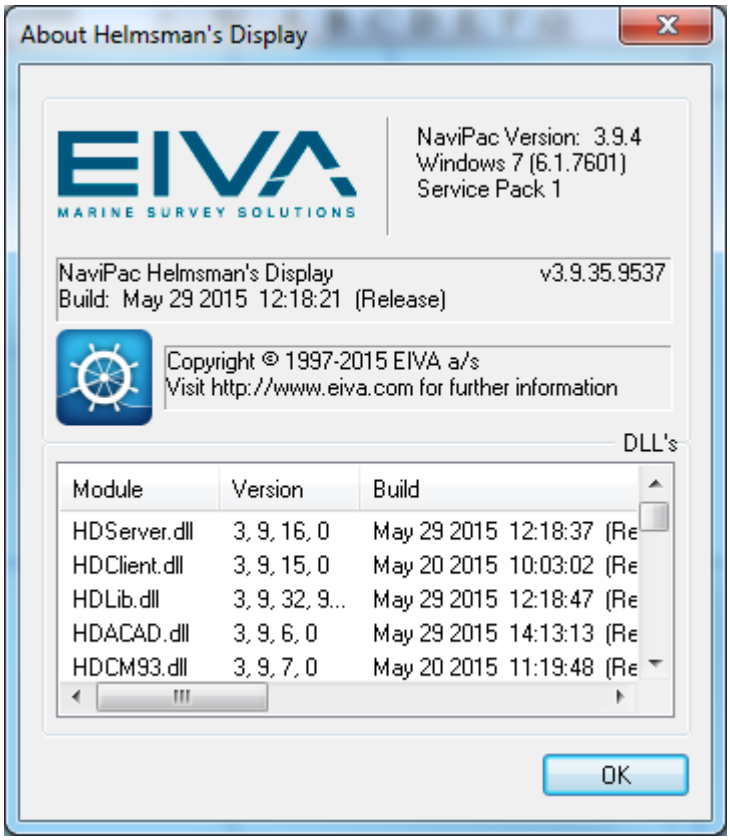
Performs a Google search for the subject on the website eiva.dk, this function requires connection to the internet.

5.4.3 Release notes

Opens an .XML file in a browser or XML viewer and displays the release notes for Helmsman's Display's current version.

5.4.4 About Helmsman's Display

The following menu will appear, giving information about the current version.


About Helmsman's Display
NaviPac Version: 3.9.4
Windows 7 (6.1.7601)
Service Pack 1
NaviPac Helmsman's Display v3.9.35.9537
Build: May 29 2015 12:18:21 (Release)
Copyright © 1997-2015 EIVA a/s
Visit http://www.eiva.com for further information
DLL's
Module Version Build
HDServer.dll 3, 9, 16, 0 May 29 2015 12:18:37 (Re
HDClient.dll 3, 9, 15, 0 May 20 2015 10:03:02 (Re
HDLib.dll 3, 9, 32, 9... May 29 2015 12:18:47 (Re
HDACAD.dll 3, 9, 6, 0 May 29 2015 14:13:13 (Re
HDCM93.dll 3, 9, 7, 0 May 20 2015 11:19:48 (Re
OK

5.5 The Main bar

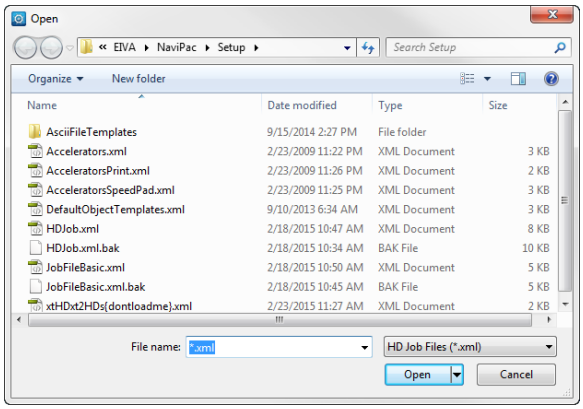
The main bar holds six buttons: new, open, save, disconnect, connect (manual), and autoconnect.

Button 1: New job

You will be asked if you would like to start a new job. All unsaved data on your current project will be lost when the new job file is opened. The content, position and size off all open windows, the files attached to objects and other parameters will be saved in the registry database.

Button 2 Open

Open an existing HD job file, the default location is %EIVAHOME%/Setup. The HD job file format extension is .xml.


Open
EIVA ▸ NaviPac ▸ Setup ▸
Search Setup
Organize
New folder
Name
Date modified
Type
Size
AsciiFileTemplates 9/15/2014 2:27 PM File folder
Accelerators.xml 2/23/2009 11:22 PM XML Document 3 KB
AcceleratorsPrint.xml 2/23/2009 11:26 PM XML Document 2 KB
AcceleratorsSpeedPad.xml 2/23/2009 11:25 PM XML Document 3 KB
DefaultObjectTemplates.xml 9/10/2013 6:34 AM XML Document 3 KB
HDJob.xml 2/18/2015 10:47 AM XML Document 8 KB
HDJob.xml.bak 2/18/2015 10:34 AM BAK File 10 KB
JobFileBasic.xml 2/18/2015 10:50 AM XML Document 5 KB
JobFileBasic.xml.bak 2/18/2015 10:45 AM BAK File 5 KB
xtHDxt2HDs(dontloadme).xml 2/23/2015 11:27 AM XML Document 2 KB
File name: *.xml
HD Job Files (*.xml)
Open
Cancel

Button 3: Save jobfile/settings

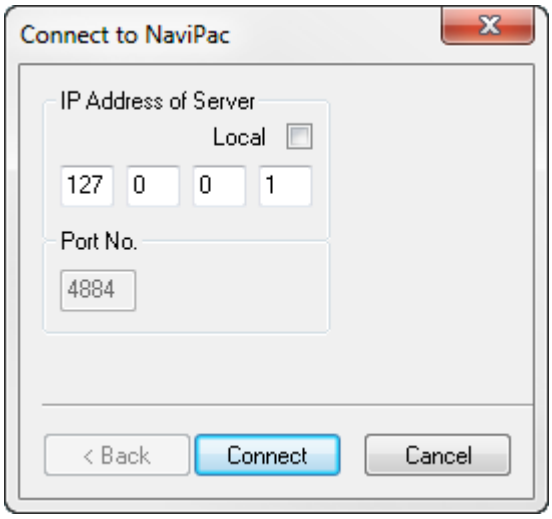
All object data (file references, properties, etc.) will we saved into the jobfile (if a jobfile name is entered). The content, position and size off all open windows, the files attached to objects and other parameters will be saved in the registry database.

Button 4: Offline

The Helmsman's Display will start in an off-line mode. This means that it is not necessary to start NaviPac program, and line planning. Printing off charts, etc. can be done independently of any navigation. The off-line mode provides independent set-up of the Helmsman's Display. The windows can be arranged to suit an offline situation, and saved without changing the online set-up. If you are online and go offline, a menu will appear asking you to confirm that you would like to disconnect from NaviPac. If %EIVAHOME% is pointing locally then make sure the gensetup.db database is in sync with the NaviPac gensetup.db (simply copy nav. .db to the slave workstation).

Button 2: Manual connection

The following menu will appear:



The IP address of the computer running the NaviPac kernel must be inserted. If the NaviPac kernel is running on the same computer as the helmsman's program, the **<Local>** checkbox should be enabled. The address will automatically change to 127.0.0.1. Press <**Connect**> to start receiving data from the specified address.

Button 3: Auto connection

The helmsman's program will try to connect to the last IP-address, where data was successfully received.

5.6 The Palette bar

The palette bar holds four buttons. With these buttons you can change the palette between daylight, twilight, dusk and night. The palette is only changing the colour inside the various views. The frame surrounding the views is controlled by the Windows system. It can be changed by right clicking the desktop. Select: **<Properties>, <Appearance> <Scheme**> and select ex. **<Rainy Day>.**

5.7 The Signal bar

The signal bar holds a red, yellow and green status lights of the currently selected dynamic object in the map view, which has the focus. The green light indicates that the system is receiving data as expected. The yellow light will appear if data is occasionally missing. The

red light indicates an error condition, and the on-line program should be monitored for indication of the fault.

The logging state light shows weather or not the log data or custom log data window is currently recording. This does not show when Runline Control has started. This tool is helpful when using Runline Control to start and stop the logging windows.

5.8 The Status bar

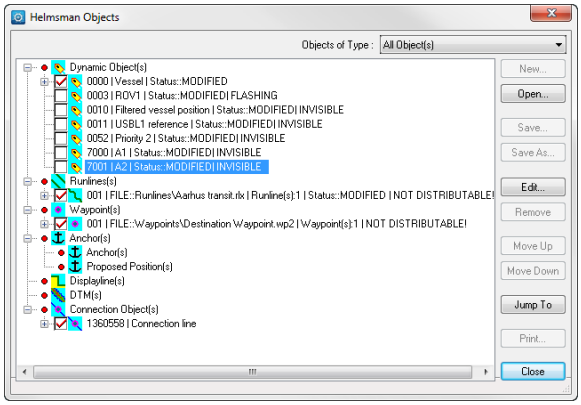
Please see **4.3.4 Status bar**

5.9 The DTM palette bar

Please see **4.3.5 DTM Palette bar**

6 OBJECT TYPES

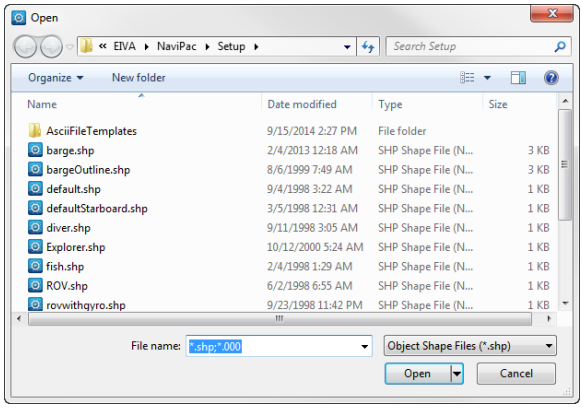
The Helmsman's Display can display the following object types: dynamic objects, runlines, waypoints, anchors (TMS), displaylines, models and connection objects. The objects available can be displayed or hidden by checking the red checkbox next to the icon. The menu can be expanded by clicking on the **<+>** next to the checkbox. By right clicking the Map View, select <**Objects>** and the following menu will appear:



From the above menu, highlighting an object and pressing **<Remove>** will delete the objects. Highlighting the object type and pressing **<New>** can add new objects. By double clicking an object, a menu for controlling the object appearance will appear.

6.1 Dynamic object (offset)

Dynamic objects can be the vessel (raw/filtered position), dynamic offset positions (ROV, other vessels, etc.), static offsets (echo sounders, towed objects, etc.). By default all objects are shown as a filled circle with a direction indicator. It is possible to attach a file (*.shp), describing the objects shape, to an object. Highlight the object, and press **<Open>.** You will now be in the C:\EIVA\NaviPac\Setup directory, where amongst other files, the outline files, *.shp files, are located. Select the *.shp file and press **<Open>.**


Open
EIVA ▸ NaviPac ▸ Setup ▸
Search Setup
Organize
New folder
Name
Date modified
Type
Size
AsciiFileTemplates 9/15/2014 2:27 PM File folder
barge.shp 2/4/2013 12:18 AM SHP Shape File (N... 3 KB
bargeOutline.shp 8/6/1999 7:49 AM SHP Shape File (N... 3 KB
default.shp 9/4/1998 3:22 AM SHP Shape File (N... 1 KB
defaultStarboard.shp 3/5/1998 12:31 AM SHP Shape File (N... 1 KB
diver.shp 9/11/1998 3:05 AM SHP Shape File (N... 1 KB
Explorer.shp 10/12/2000 5:24 AM SHP Shape File (N... 1 KB
fish.shp 2/4/1998 1:29 AM SHP Shape File (N... 1 KB
ROV.shp 6/2/1998 6:55 AM SHP Shape File (N... 1 KB
rovwithgyro.shp 9/23/1998 11:42 PM SHP Shape File (N... 1 KB
File name: *.shp;*.000
Object Shape Files (*.shp)
Open
Cancel

The object name in the menu above will change from:

Example: **Offset1 Status: OK**

to

Offset1 FILE: Setup\fish.shp Status: OK

Make sure, that the scale on the Map View is small enough to show the object outline. If the scale is larger than a specified “break scale” (see below), the object will be drawn as a filled circle with a direction indicator.

By double clicking on the object name in the above menu, or by double clicking on the object on the Map View, a menu for controlling the object appearance will appear. See **5.3.1.7.3** Settings.

6.2 Runline

A Runline consists of at least two sets of coordinates, describing a line, which the vessel or another object should follow. A Runline can consist of many segments in any combination of straight or curved segments. Runlines can be created by manual entry (see **5.3.1.8.1** New Runline) or can be cursor created (see **5.3.1.8.2** New Runline (cursor created))

6.3 Displayline

A display line is used for displaying background information on the Map View. This could be coastlines, contour curves, pipelines, cables, various constructions, etc. It is not possible to use the display line as any reference for calculations. The file can be an ASCII file. See: **7.2.1 The *.dis format** or an AutoCAD file, e.g. a .DWG or *.DXF file.

6.4 Waypoint

A waypoint is a set of coordinates: Easting, Northing, and height. They can be used to show the position of an anchor, buoy, data logger, etc. A waypoint can be used as a reference for range/bearing calculations. See **5.3.7 Range & Bearing**

6.5 Model

See **5.3.1.11 Models** (DTM

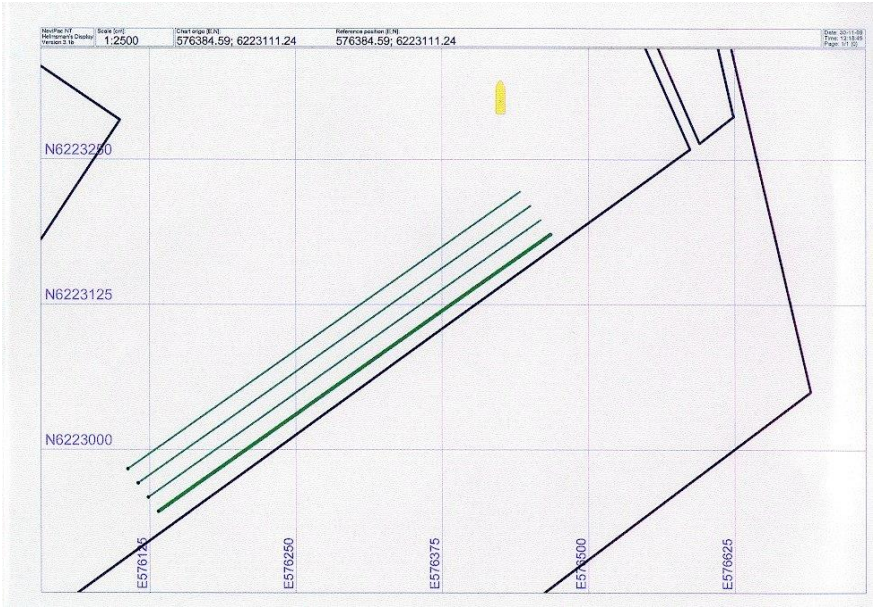
7 PLOTTING FACILITIES IN HELMSMAN'S DISPLAY

7.1 Introduction

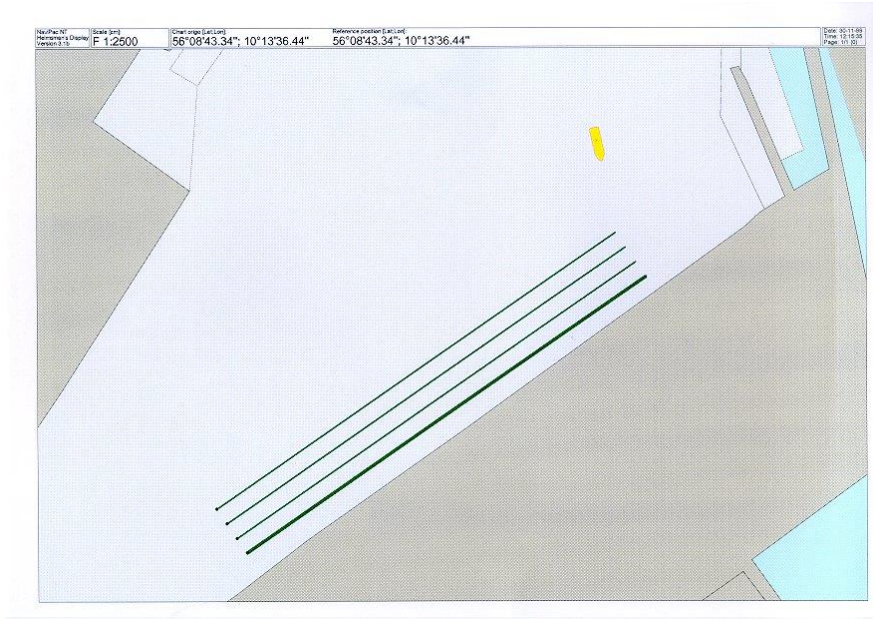
The Helmsman's Display provides facilities to plot the content of the Helmsman's Display on any printer/plotter supported by the Windows system.

The content of the display can be the C-Map chart, runlines, way points and displaylines in any combination.

No C-Map:



With C-Map:



The charts are printed/plotted by giving the Map View focus and pressing **<File> <Print>.**

In the following examples, a screen dump will be used instead of the above scanned picture. Therefore there will be no header in the following examples.

7.2 The Displayline format

The display line format can be either AutoCAD *.dwg or *.dxf format or ASCII format *.dis or *.npd, where *.dis is a dedicated display line format, and *.npd is a NaviPac Custom logging format. In this manual only the ASCII formats will be described.

7.2.1 The *.dis format

The *.dis format is a simple three column X,Y,Pen control format originally developed by Hewlett Packard for their pen plotters, see ..\NaviPac\Displaylines\HD_Displayline.txt

7.2.1.1 Pen definition

col1	col2	col3	Meaning
X	Y	-2	Pen up before move
X	Y	-1	Pen down before move
X	Y	1	Pen down after move
X	Y	2	Pen up after move
Colour No.	Palette	3	Select line colour
Line type	Width	4	Select line type
Colour No.	Y	5	Colour value for fill
X	Y	6	Start polygon with fill
X	Y	7	End polygon
X	Y	8	End of array data
X	Y	9	No operation
X	Y	10	Start polygon with FILL
X	Y	11	Start polygon with FILL & EDGE
X	Y	12	FRAME
Colour No.	Palette	13	Select area colour
Width(m)	Y	14	Select line width

7.2.1.2 Colour values

0	Black	Black
1	White	White
2	Red	Red
3	Yellow	Light Red
4	Green	Green
5	Cyan	Light Green
6	Blue	Blue
7	Magenta	Light Blue
8	Black	Cyan

```
9           Light Green       Light Cyan
10          Light Cyan        Dark Yellow
11          Light Blue        Yellow
12          Light Magenta     Buff
13          Light Red         Brown
14          Orange            Magenta
15          Brown             Light Magenta
16          Beige             Beige
17          Buff              Ignored
18          Dark Yellow       Ignored
19          Dark Grey         Ignored
20          Grey              Ignored
21          Light Grey        Ignored
>21         Ignored           Ignored
```

7.2.1.3 Palette

```
*****************************************************************
0     System palette
1     Alternative (ECDIS) palette
```

7.2.1.4 Line type

```
*****************************************************************
1     solid line (default setting)          ____________________
2     dot at end of line                    ____________________
3     loosely spaced dots                   . . . . . . . . . .
4     closely spaced dots                   ....................
5     dashes                                - - - - - - - - - - -
6     dash, dot                             -.-.-.-.-.-.-.-.-.-.-
7     large dash, small dash                --.--.--.--.--.--.--.
8     dash, dot, dot                        -..-..-..-..-..-..-..
9     solid line, short line at end
10    solid line, long line at end
```

7.2.1.5 Example 1:

A simple ASCII file generated with Notepad could look like this:

```
576097.4, 6223284.9, -2
575764.9, 6222772.4, -1
575864.9, 6222732.4, -1
576587.4, 6223259.9, -1
576538.7, 6223367.5, -1
576546.8, 6223375.6, -1
```

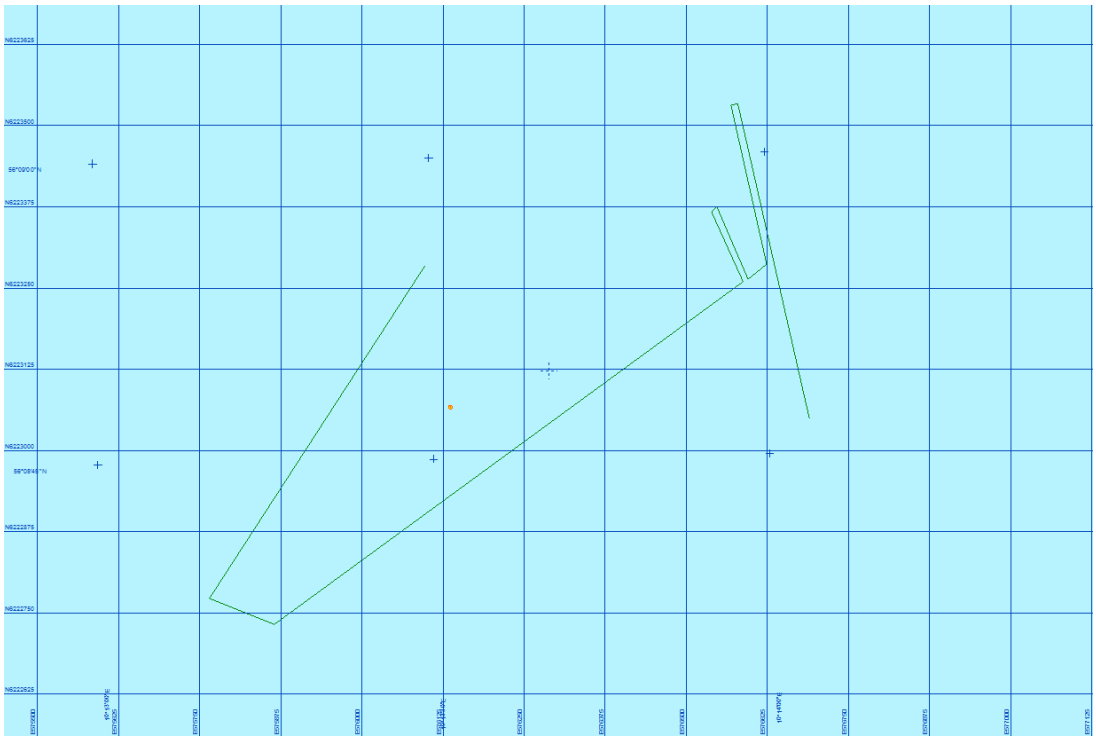
```
576595.0, 6223263.7, -1
576623.7, 6223286.8, -1
576568.7, 6223531.8, -1
576579.3, 6223533.7, -1
576689.4, 6223050.0, -1
```

The first line tells the HD to move the pen to the coordinate: **576097.4, 6223284.9**. As the last column is: -2, the pen is up before moving, meaning that the pen will only move to the position and not draw anything.

The 2. line tells the HD to move the pen to the coordinate: **575764.9, 6222772.4.**

As the last column is: -1, the pen will be down before moving meaning that the HD will draw a line from the coordinate: **576097.4, 6223284.9** to **575764.9, 6222772.4**

The following lines will draw lines to the specified co-ordinates. The result will look like this:



7.2.1.6 Example 2:

The colour of a display line is green by default. If the line colour should be black, and the line width should be 2m for example, the following two lines must be inserted in the beginning of the display line file:

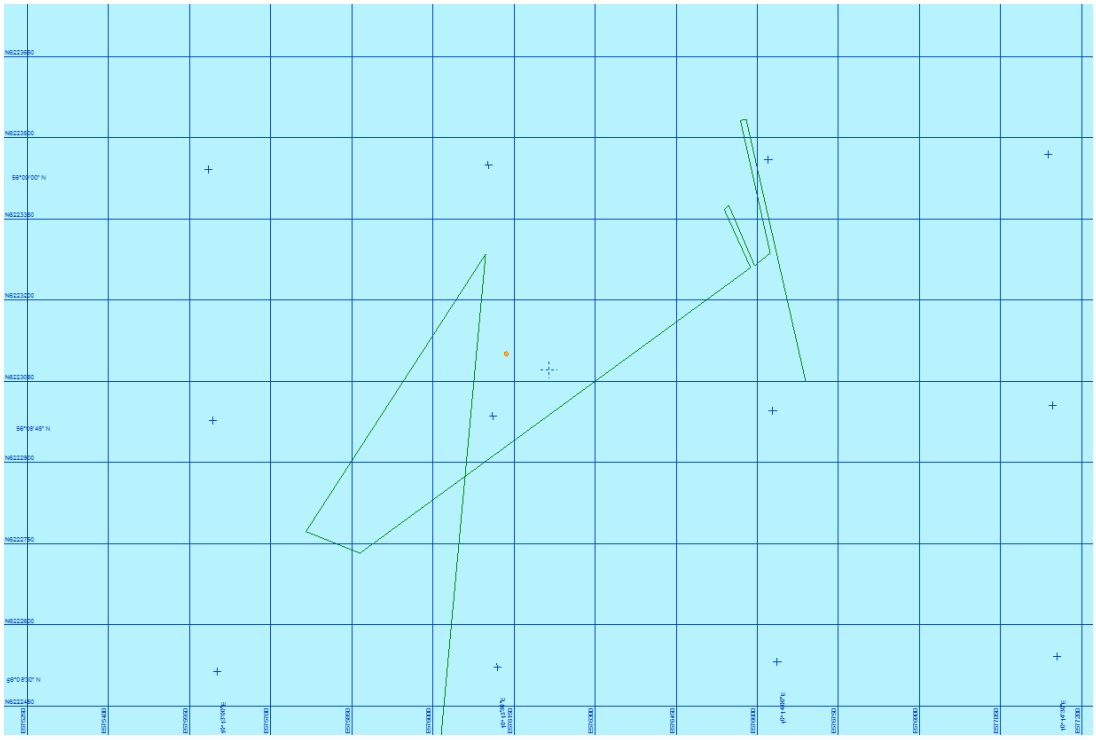
```
0,,3
2,,14
576097.4998, 6223284.9933, -2
575764.9998, 6222772.4933, -1
575864.9998, 6222732.4933, -1
576587.4998, 6223259.9933, -1
576538.7698, 6223367.5033, -1
576546.8898, 6223375.6333, -1
576595.0198, 6223263.7533, -1
576623.7698, 6223286.8833, -1
576568.7798, 6223531.8933, -1
576579.3998, 6223533.7633, -1
576689.4098, 6223050.0333, -1
```

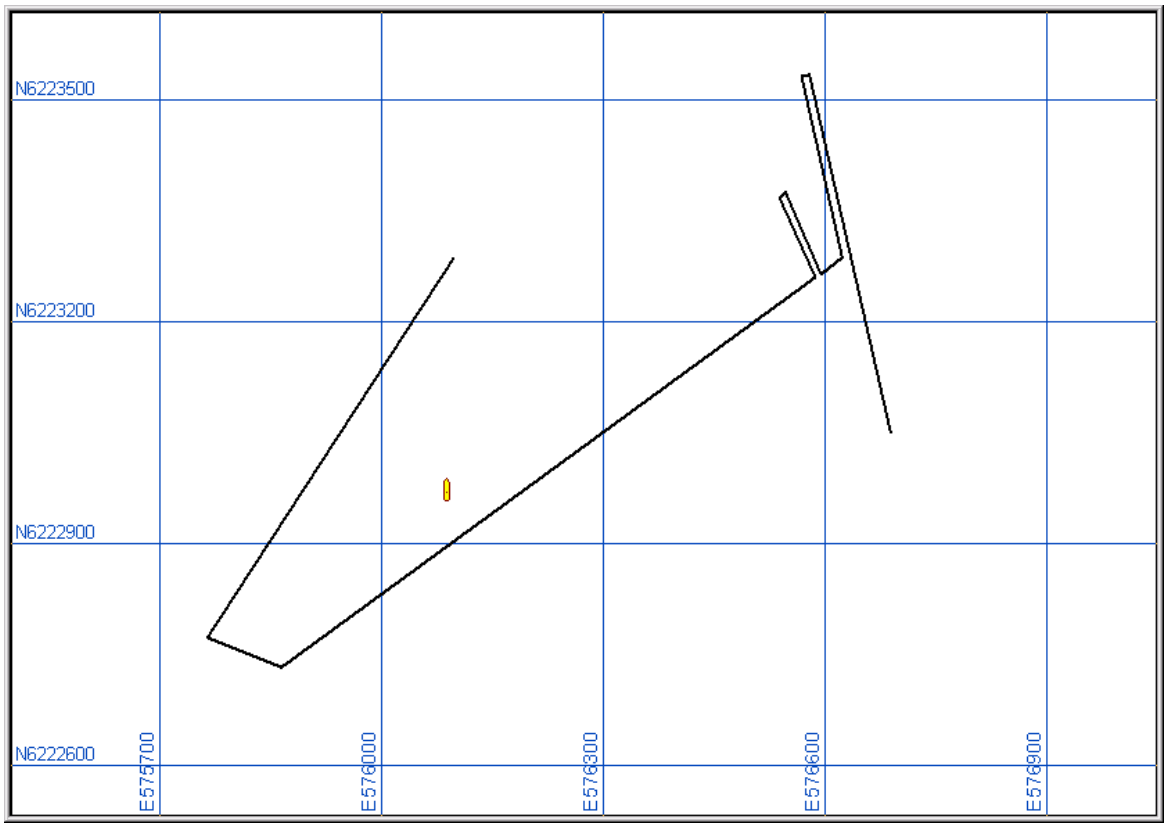
The third column in the first line is: 3 meaning: **select line colour**, so a colour must be specified in the first column. In this case the colour is specified as 0 meaning black.

The 3 column in the second line is 14 meaning: **Select line width.** The line width must be specified in the first column. In this case the width is specified as 2m.

The final result will look like this:

At this point I get this from the data:





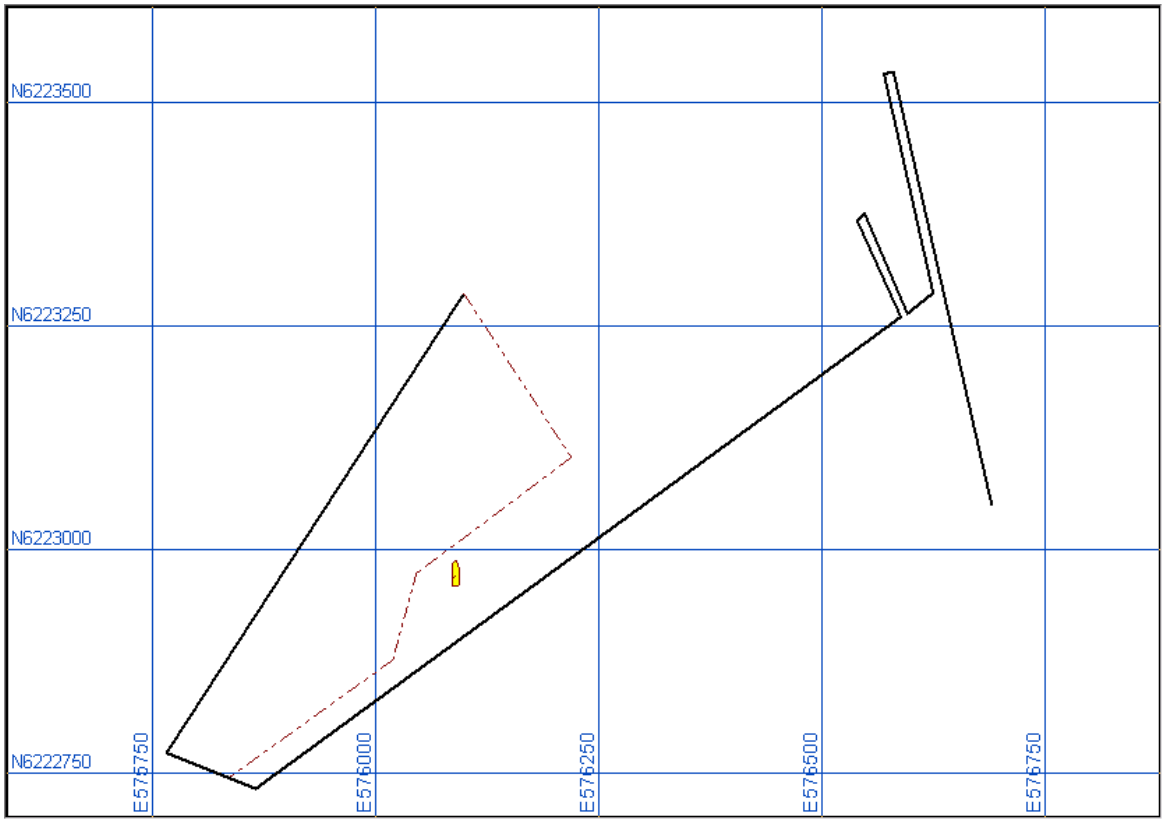
7.2.1.7 Example 3:

If a restricted area should be drawn, the following lines could be added to the file:

```
0,,3
2,,14
576097.4998, 6223284.9933, -2
575764.9998, 6222772.4933, -1
575864.9998, 6222732.4933, -1
576587.4998, 6223259.9933, -1
576538.7698, 6223367.5033, -1
576546.8898, 6223375.6333, -1
576595.0198, 6223263.7533, -1
576623.7698, 6223286.8833, -1
576568.7798, 6223531.8933, -1
576579.3998, 6223533.7633, -1
576689.4098, 6223050.0333, -1
2,,3
8,,4
576098.1098, 6223285.7533, -2
576218.4298, 6223102.9433, -1
```

```
576044.9898, 6222973.2533, -1
576018.4298, 6222876.3733, -1
575834.8198, 6222744.7433, -1
```

Line 14 selects a red pen and line 15 selects the line type: “dash, dot, dot”. The result will look like this:



7.2.1.8 Example 4:

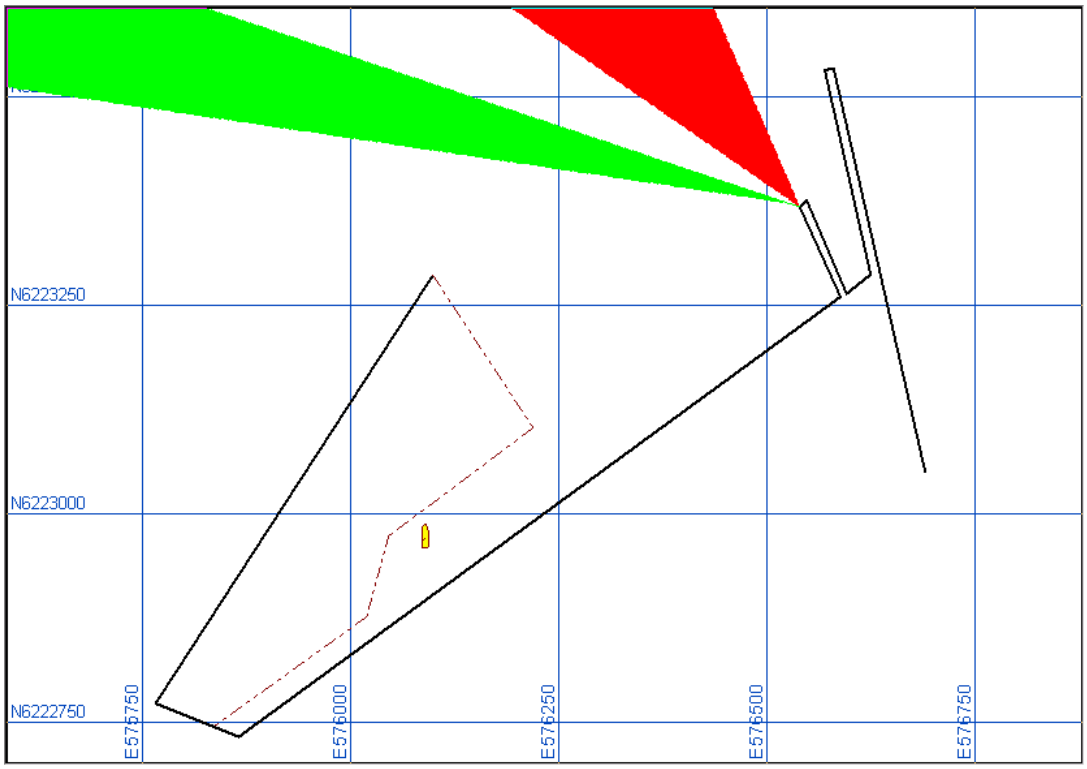
If lighthouse sectors should be added, line 21 to 37 must be added to the file:

```
Line  1:          0,,3
Line  2:          1,3,4
Line  3:          576097.4998, 6223284.9933, -2
Line  4:          575764.9998, 6222772.4933, -1
Line  5:          575864.9998, 6222732.4933, -1
Line  6:          576587.4998, 6223259.9933, -1
Line  7:          576538.7698, 6223367.5033, -1
Line  8:          576546.8898, 6223375.6333, -1
Line  9:          576595.0198, 6223263.7533, -1
Line 10:          576623.7698, 6223286.8833, -1
```

```
Line 11:          576568.7798, 6223531.8933, -1
Line 12:          576579.3998, 6223533.7633, -1
Line 13:          576689.4098, 6223050.0333, -1
Line 14:          2,,3
Line 15:          8,,4
Line 16:          576098.1098, 6223285.7533, -2
Line 17:          576218.4298, 6223102.9433, -1
Line 18:          576044.9898, 6222973.2533, -1
Line 19:          576018.4298, 6222876.3733, -1
Line 20:          575834.8198, 6222744.7433, -1
Line 21:          13,,3
Line 22:          13,,13
Line 23:          ,,11
Line 24:          576538.49, 6223368.19, -2
Line 25:          575813.49, 6223867.69, -1
Line 26:          576181.49, 6224189.69, -1
Line 27:          576538.49, 6223368.19, -1
Line 28:          ,,7
Line 29:          9,,3
Line 30:          9,,13
Line 31:          ,,11
Line 32:          576538.49, 6223368.19, -2
Line 33:          573732.87, 6224304.45, -1
Line 34:          573657.87, 6223798.20, -1
Line 35:          576520.37, 6223373.20, -1
Line 36:          576538.49, 6223368.19, -2
Line 37:          ,,7
```

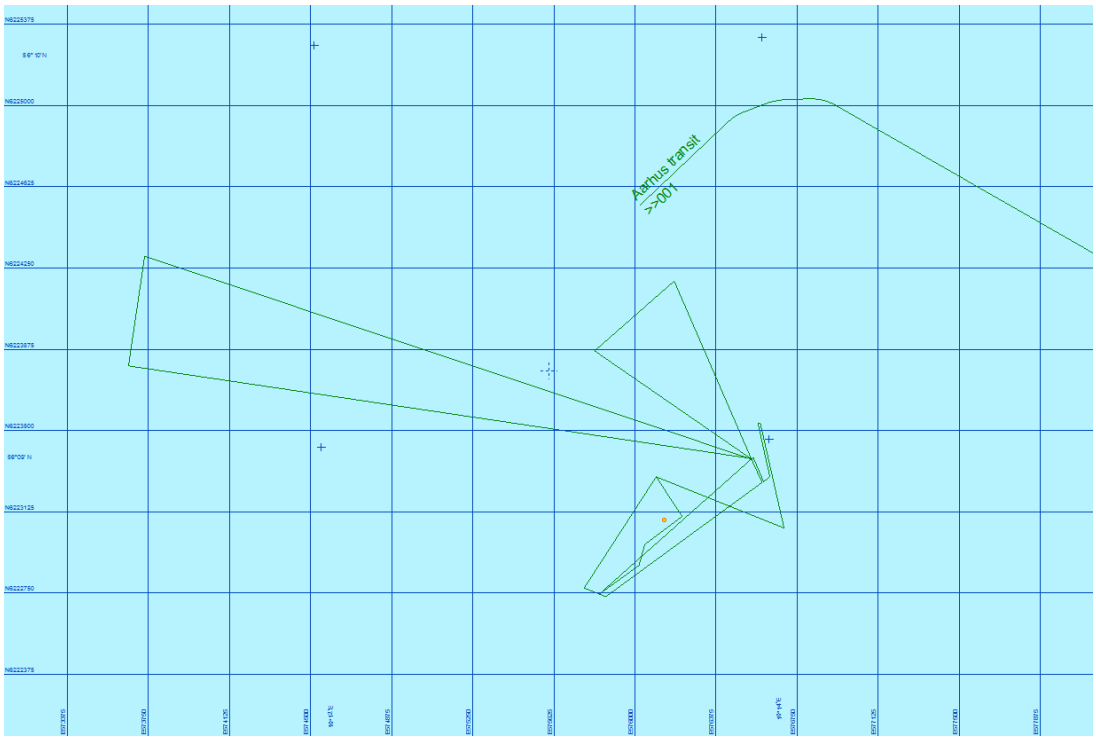
Line 21 meaning: Select the light red pen for line colour.
Line 22 meaning: Select the light red pen for area fill colour.
Line 23 meaning: Start the polygon with fill and edge.
Line 24 to 27: Describes the polygon to be filled.
Line 28 meaning: Marks end of polygon.
Line 29 meaning: Select the light green pen for line colour.
Line 30 meaning: Select the light green pen for area fill colour.
Line 31 meaning: Start the polygon with fill and edge.
Line 32 to 36: Describes the polygon to be filled.
Line 37 meaning: Marks end of polygon.

The result will look like this:



Here is the screenshot I get with this data:

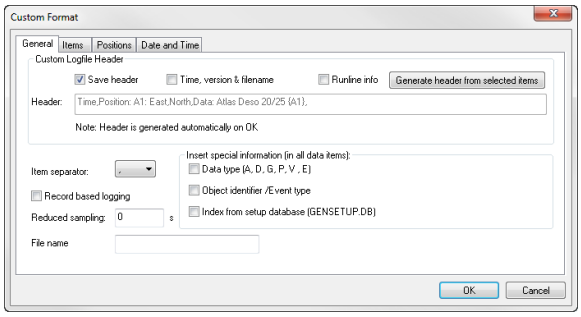
Removing all but the points creates this:

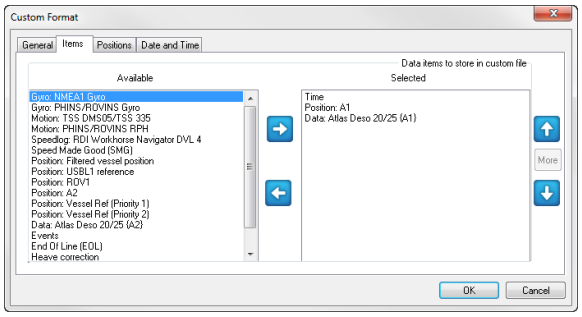


7.2.2 The *.npd format

The *.npd format comes in three styles: the general format for reading easily, the survey format for import to NaviEdit or ASCII parser, and the custom logging format.

Let us assume that the custom specified logging has been set-up as follows:





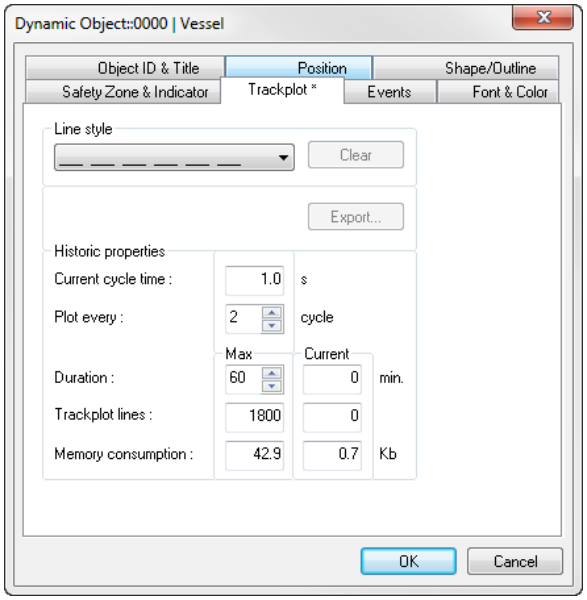
The following file: 991201C001.npd will be logged:

Time,Position: A1: East,North,Data: Atlas Deso 20/25 {A1},
14:54:14.139, 576135.5148,6223101.8116, 66.7700
14:54:15.139, 576135.5145,6223101.8302, 67.2900
14:54:16.139, 576135.5142,6223101.8487, 67.8000
14:54:17.139, 576135.5142,6223101.8487, 65.8300
14:54:18.139, 576135.5138,6223101.8673, 66.3400

From this file it is possible to plot the Easting, Northing position as a displayline. See Chapter 4 for details.

7.3 Creating displaylines from a trackplot

If a trackplot is enabled by selecting a line style from the following menu:

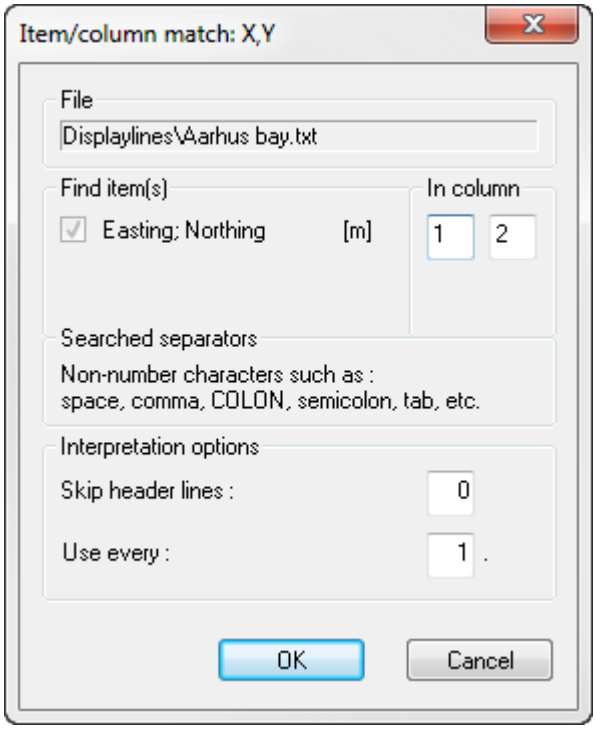


The trackplot can be stored as a display line file by clicking the **<Export>** button. See section 5.3.1.7.3 for more details.

7.4 Plotting NaviPac customer specified logging files

When you want to open a new displayline, also the *.npd (NaviPac data) files can be read. The file must contain an Easting and a Northing.

From the EIVA\NaviPac\Log folder select the *.npd file to plot. The following menu will appear:



If the *.npd file may have the following content:

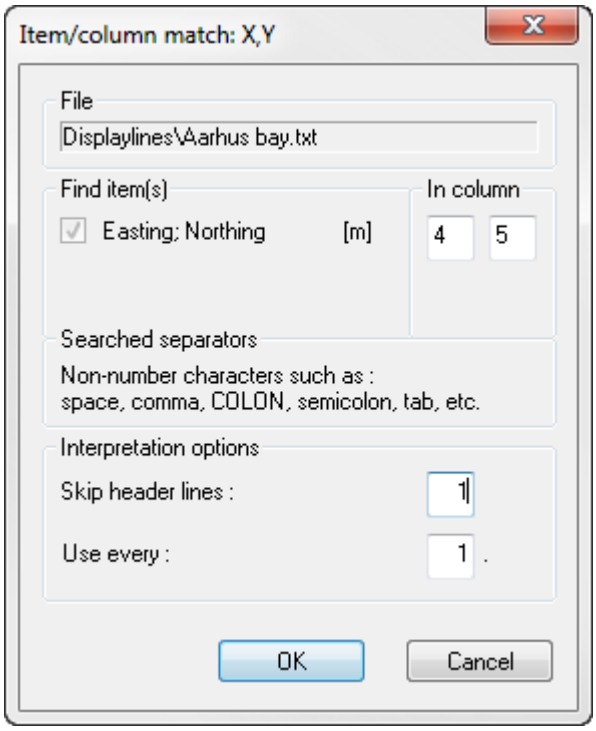
```
Column:

 1  2  3           4           5           6

Time,DESO25-1:1: East,North,Atlas Deso 20/25: DESO25-1:1,
11:43:38.047,  576480.9734,6223209.8968,    68.1000
11:43:39.046,  576480.9736,6223209.8970,    65.9200
11:43:40.048,  576480.9738,6223209.8973,    66.2300
11:43:41.049,  576480.9740,6223209.8975,    66.5300
11:43:42.046,  576480.9742,6223209.8977,    66.8400
```

```
11:43:43.047,   576480.9743,6223209.8979,     67.1500
11:43:44.047,   576480.9744,6223209.8980,     67.4600
11:43:45.047,   576480.9746,6223209.8982,     67.7700
11:43:46.047,   576480.9747,6223209.8983,     68.0800
```
In this case the Easting; Northing pointer must be set to 4, 5 as the colon in the time will be interpreted as a column separator by the computer.

As the file contains a header, the program should skip the first line. The menu should look like this:



Multiple *.npd files can be read.

8 Data Items

CMG (Course Made Good): The objects course made good will be displayed. CMG is the same as COG.

COG (Course Over Ground): The objects course over ground will be displayed. COG is

the same as CMG.

dX/dY: If a dynamic object, like a TrackPoint transponder, is selected as object, it is possible to display the X, Y offset from the TrackPoint transducer to the transponder.

dZ: If a dynamic object, like a TrackPoint transponder, is selected as object, it is possible to display the Z offset from the TrackPoint transducer to the transponder.

Gyro: The objects gyro information, with reference to true north, will be displayed.

GHd: The objects heading, with reference to the grid, will be displayed.

TpNo: If a dynamic object, like a TrackPoint transponder, is selected as object, it is possible to display the transponder number in the dynamic object view.

Roll, pitch, heave: If an inclination sensor (like TSS DMS05) is connected to the selected object, the inclination data can be displayed in the dynamic object window by checking these boxes.

Dpth: If the Helmsman's Display is connected to NaviScan using: <**File**>, <**NaviScan**>, <**Connect to NaviScan**>, the depth directly underneath the Seabat can be displayed. If the ROV / Vessel. This is not necessary the centre beam.

Dat: If a dynamic object (like an echo sounder, magnetometer, or depth sensor) is selected as object, it is possible to display the data from this object.

mCvg: The meridian convergence at the vessel position can be displayed.

SDev: If more than three LOPs are being used for surface navigation, a standard deviation can be calculated and displayed.

Runline related items:

Ref (id of reference position): The number of the object controlling the view. This number will also be displayed in the object positions view.

Ref (name of reference position): The name of the object controlling the view.

RlId (Runline ID): The number:segment number of the Runline, that is used as a reference for the calculations.

RN (Runline Name): The name of the selected Runline.

TDAL (Total DAL): The total DAL is the distance from the start of the current Runline to the reference position of the object controlling the view.

DEOL (Distance to End Of Line): This is the distance to the end of the line. This distance could include several segments.

DSOL (Distance to Start Of Line): The direct distance from the reference position, of the object controlling the view**,** to the start of the current Runline.

ETAeol (Estimated Time of Arrival at end of line): Number of minutes to the end of the line is reached.

ETAsol (Estimated Time of Arrival at start of line): Number of minutes to the start of the line is reached.

Barge Runline related items:

BgHd (Barge Heading): The heading the pipe laying barge should have to lay the pipe on the Runline.

°/pull (degrees per pull): The number of degrees the barge heading should change for every joint.

Segment related items:

DOL (Distance Off Line): The projected distance from the objects reference point to the Runline. If the object is to the right of the line, the number will be positive. If the object is to the left of the line, the number will be negative.

DCC (Distance Cross Course): The projected distance from the objects reference point to the Runline. If the object is to the right of the along line KP direction, the number will be positive. If the object is to the left of the along line KP direction, the number will be negative.

DAL (Distance Along Line): The distance along line is the projected distance from the start of the current segment to the reference position of the object controlling the Runline view.

DEOS (Distance to End Of Segment): The projected distance from the reference position, of the object controlling the Runline view, to the end of the current segment.

SKP (segment Start Kilometre point): The kilometre point of the start of the current segment

KP (current Kilometre point): The kilometre point of the reference point of the object controlling the Runline view.

EKP (segment End Kilometre point): The kilometre point of the end of the current segment.

KPFtr (Kilometre point Factor): The kilometre point factor of the current segment.

Brg (grid Bearing): The grid bearing of the current segment.

TBrg (True Bearing): The True bearing of the current segment.

NBrg (Next grid Bearing): The grid bearing of the next segment in the Runline.

NTBrg (Next True Bearing): True bearing of the next segment in the Runline.

ETAeos (Estimated Time of Arrival at end of segment): Number if minutes to the end of the current segment is reached.

Distance Counter Items:
Reference position: The object that is used as an reference for the calculation.

Reference position, ID: The identity will be displayed in the distance counter view.

Reference position, Ref: The name of the reference object will be displayed in the distance counter view.

First, Tm: Will display the time when the counter was started the first time.

First, Dst: Will display the start distance the first time the counter was started.

First, E/N: Will display the start position in grid coordinates the first time the counter was started.

First, Lat/Lon: Will display the start position in geographical coordinates, the first time the counter was started.

Last, Tm: Will display the time, when the counter was stopped the last time.

Last, Dst: Will display the distance, the last time the counter was stopped.

Last, E/N: Will display the position in grid coordinates, the last time the counter was stopped.

Last, Lat/Lon: Will display the position in geographical coordinates, the last time the counter was stopped.

Distance by, straight line: The distance will be calculated as the straight line between the start position and the reference object.

Distance by, KP: A Runline will be used as reference for the distance calculation.

Datum, Wgs84/User: The position can be displayed in either WGS84 or User datum.

Date/Time items:

Items, Time: The current time will be displayed as HH:MM:SS.

Items, Date (short): The current date will be displayed as dd-mm-yyyy.

Items, Date (long): The current date will be displayed as dd.<Name of month> yyyy.

Time UTC: The current time in UTC will be displayed.

Other items:

EVNTs (number of events to end of line): The remaining number of events to end of line according to selected event mode (see User's guide to NaviPac Online for further information).

LstEv (last event): ID of last event.

9 VERSION DESCRIPTIONS

Version number/date	Description
1.0 25-02-2000	COM: Created.
1.1 04-01-2002	JUS: C-Map subscription and loading parts added.
1.2 25-01-2002	JUS: Reverse/revert parallel stepping revised. Runline/segment data items revised.
1.3 07-08-2002	JUS: Chapter 5.3.1.4.4 revised.
3.9 13-01-2015	New template, KST: Content edited up to version 3.9
3.9.4 10-06-2015	JUS: Revised for NaviPac v3.9.4 with hotfix2 applied